

SCHOOL LAUNCH • EXPLORE TRACKS

EXPLORE HORSES AND PONIES • RANGER

Track 4 of the Explore Tracks at the Ranger level: four trails for young horse lovers who are ready for more facts, maps, diagrams and notebook entries about the breeds, riding and care, famous horses of history, and great horse stories.

First edition

*Hast thou given the horse strength? hast thou clothed his neck with thunder?
Job 39:19 (KJV)*

COURSE GUIDE

Explore Tracks are for children who want more of what they love. Each track is a set of short, stand-alone stops. At the Ranger level every stop adds to the story: more facts and figures, a map or labelled diagram, a picture to study closely, a hands-on task, a game, and a short written entry in the Field Notebook.

The Horses track has four trails of eight stops. Trail A meets the breeds, measures in hands and learns where each breed came from and what it was bred to do. Trail B studies the horse's body, tack, hooves, feed and gaits, and the rules that keep a rider safe. Trail C follows famous horses through history, from Bucephalus and the horses of Scripture to the Pony Express and Secretariat's Belmont. Trail D reads great horse stories, asks why their authors wrote them, and ends with the child's own illustrated horse story.

Along the way the Ranger costs out a horse's keep, reads Muybridge's photographs frame by frame, and learns what the Bible says about the strength of the horse and the duty of a righteous man toward his beast.

WHO IT IS FOR

Written for children about ages 10–13 who read on their own and can write a paragraph. Younger brothers and sisters working at the ● Scout level, and older ones at the ● Expert level, can do the same stops together, each at their own depth. No horse is needed. Nothing earlier is required.

HOW TO USE THIS COURSE

1. **One stop at a time.** A stop takes 20–30 minutes: read the story, study the picture or diagram, do the hands-on part, play the game and write the notebook entry. Two or three stops a week works well.
2. **Any order.** The four trails are independent, and every stop stands on its own.
3. **Field Notebook.** Each stop ends with a short entry: a labelled diagram, a map, a table or a paragraph in the child's own words. Each trail builds something: a breed card set, a horse-care manual, an illustrated timeline, or a finished story book. A parent signs each trail certificate.
4. **Goes deeper in.** Each stop names the School Launch course that covers the same ground in full: Life Science, Gardening & Animals, History, Geography, Small Business & Economics, Arithmetic, Art or Literature.
5. **Badge quizzes.** Each trail has a short, optional quiz, oral or written. They are for review and fun, not grades.

SCOPE AND SEQUENCE

Trail 1: Horses 🐾 Trail A: Meet the Breeds (Self-paced)

Trail 2: Horses 🐾 Trail B: Riding and Care (Self-paced)

Trail 3: Horses 🐾 Trail C: Famous Horses in History (Self-paced)

Trail 4: Horses 🐾 Trail D: Horses in Great Stories (Self-paced)

MATERIALS

- **Field Notebook (a sketchbook or composition book)** One for the whole track.
- **Colored pencils, a ruler, a tape measure, scissors, glue and index cards** For diagrams, breed cards, measuring in hands and maps.
- **A world atlas or printed outline maps** For breed homelands, the Pony Express route and battle maps.
- **A calculator** For the cost-of-keep project and race-time figures.
- **A shoebox and craft scraps (optional)** For the model stable.
- **A Bible (KJV)** For the verse at each stop.

GRADING

Explore Tracks are not graded. A Ranger stop is done when the child has read the story, done the hands-on part and written a notebook entry that is neat, labelled and in his or her own words.

Badges and trail certificates are earned by finishing the stops.

- Every five stops earns a printable badge; finishing a trail earns a certificate.

A NOTE TO PARENTS

You do not need to be a horseman. Let the child read the story, then talk it over: “What did you learn? What would you ask the person who was there?” Each stop has a short *For families* note with sources and any facts that are uncertain or disputed.

Safety: no stop requires a real horse. If you visit a stable, an experienced adult should be present for all handling, riders should wear a helmet and sturdy boots, and the child should follow the stable’s own rules. Trail B’s safety stop is a good one to do before any visit.

Money: the cost-of-keep project uses sample prices to learn what a horse really costs. Nothing in the track involves real buying or selling; if a child turns a project into a sale, a parent should approve it first.

Books: *Black Beauty* (1877) is public domain and is quoted. *Misty of Chincoteague*, *King of the Wind* and *The Black Stallion* are under copyright and are summarized, not quoted; borrow them from the library.

Scripture is quoted from the King James Version and read as true. War horses (Alexander’s campaigns, Waterloo, the Civil War, Korea) are told plainly but without graphic detail. Racing stops do not mention betting.

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Trails may be done in any order.

HORSES TRAIL A: MEET THE BREEDS

The first trail of the Horses track meets the horse family. It starts with how horsemen measure in hands and tell a horse from a pony. Then it visits the Arabian of the desert, the Thoroughbred and its three founding sires, the Shire, Clydesdale and Percheron draft horses, the Quarter Horse of the cattle trails, the Shetland and Welsh ponies of Britain and the feral herd of Assateague Island. It ends with the colors and markings every horseman uses to describe a horse.

This is the  **Ranger** level, for ages 10 to 13. The student reads each stop alone, in 25 to 35 minutes, and a parent checks the notebook and practice answers. Every stop stands by itself. Each one has a longer story with dates and numbers, five key terms, a map or labelled diagram, a one-paragraph notebook entry and five practice questions. Over the trail, the student builds a **breed trading-card set** and a set of maps and diagrams in the Field Notebook.

Five stops earn the **Horse Ranger badge, part 1**; all eight stops earn part 2 and the **Trail A certificate**. The badge quizzes at the end are optional.

BEFORE YOU BEGIN

- Read about 500 words on your own and retell the main facts in order.
- Multiply and divide by 4 and by small whole numbers, and use a map key and a compass rose.

MASTERY CHECKLIST

- ☐ I can convert horse heights between hands and inches and use the 14.2-hand line, with its exceptions.
- ☐ I can tell where the Arabian, Thoroughbred, Shire, Clydesdale, Percheron, Quarter Horse, Shetland and Welsh pony came from and what each was bred to do.
- ☐ I can explain how the Assateague herds came to the island and how they are managed today.
- ☐ I can name a horse's color by its body and points and name its face and leg markings.
- ☐ I have drawn at least four labelled maps or diagrams and written eight notebook entries.

OPTIONAL BOOKS AND RESOURCES

- **Kentucky Horse Park: International Museum of the Horse**
(<https://kyhorsepark.com>): Breed information and exhibits on horse history; useful for every stop.
- **Chincoteague National Wildlife Refuge (U.S. Fish and Wildlife Service)**
(<https://www.fws.gov/refuge/chincoteague>): Official facts on the Virginia herd and Pony

Penning for Stop A7.

- **Assateague Island National Seashore (National Park Service)**
(<https://www.nps.gov/asis>): Maps of the island and pages on the Maryland herd for Stop A7.
- **Marguerite Henry, *Album of Horses* (1951)** (<https://www.worldcat.org>): Chapters on dozens of breeds, illustrated by Wesley Dennis. Look for it at the library.
- **Wellcome Collection and The National Gallery, London**
(<https://wellcomecollection.org>): Free online images of the 1809 pony print (Stop A6); the National Gallery (nationalgallery.org.uk) has Whistlejacket and Horse Frightened by Lightning.

1.1 HORSE OR PONY? HANDS AND HEIGHT

OBJECTIVES

- Convert horse heights between hands and inches, and read heights written the horseman's way (15.2, 16.0).
- Explain why horses are measured at the withers and how a measuring stick is used.
- Use the 14.2-hand line, and a horse's build, to tell a horse from a pony, and name some exceptions.

Warm-up. Measure the width of your own hand across the knuckles, fingers together. Then measure a grown-up's hand. Whose is closer to 4 inches? Why would traders long ago have wanted one fixed size for "a hand" instead of using whatever hand was nearest?

Video slot. Video coming. How a horse is measured in hands with a measuring stick at the withers; horse versus pony. Search approved channels (Kentucky Horse Park, a Pony Club or 4-H channel, a university extension equine program); preview first.

KEY TERMS

hand

The unit used to measure a horse's height. One hand equals exactly 4 inches (about 10.2 centimeters).

withers

The ridge at the base of the neck, between the shoulder blades; the highest fixed point of a horse's back and the place where height is measured.

measuring stick

An upright rod marked in hands and inches, with a sliding arm and a small level, used to measure a horse at the withers.

pony

A grown horse-family animal under 14.2 hands (58 inches), usually with a stocky build, short legs, a thick coat and a hardy nature.

conformation

The shape and build of a horse: how its body, legs, neck and head are put together.

CORE IDEAS

Long before tape measures, farmers and horse traders measured horses with the tool they always carried: the hand, laid palm-flat and stacked one above another up the animal's shoulder. Because hands come in different sizes, the unit was eventually fixed at exactly **4 inches**. England, Ireland, the United States, Canada and Australia still use the **hand** today, and many other countries give the height in centimeters as well (1 hand is about 10.2 cm).

A horse is measured from the ground to the top of the **withers**, the ridge where the neck meets the back. The head and neck swing up and down all day, but the withers are built from the tall spines of the backbone and stay in one place. The horse should stand square on flat, level ground. A **measuring stick** is set upright beside the front leg, and its sliding arm is lowered until it rests on the withers; a little bubble level on the arm keeps the reading honest. For official pony classes, horses are measured without shoes, because a shoe can add a quarter to half an inch.

Heights are written in a special way. A horse that stands 15 hands and 2 inches is written **15.2** and said “fifteen-two.” The number after the point is *inches*, not tenths, so it runs only from 0 to 3. After 15.3 comes 16.0. To turn a height into inches, multiply the hands by 4 and add the inches: 15.2 is $15 \times 4 + 2 = 62$ inches. To go the other way, divide by 4: 58 inches $\div 4 = 14$ with 2 left over, or 14.2.

That number, **14.2 hands** (58 inches, about 147 cm), is the line most breed societies and the international riding federation use: a grown animal under it is a **pony**, and one at or above it is a horse. Height is not the whole story, though. Ponies usually have a different **conformation**: shorter legs for their body, a deeper chest, a thick mane and winter coat, small ears and a broad forehead. Most are hardy “easy keepers” that can live on rough grass that would leave a racehorse thin.

Because of this, there are famous exceptions. Many Arabians stand only 14.1, yet they are always called horses because of their build. The Icelandic horse is pony-sized but its owners insist it is a horse. Tiny breeds like the Falabella, often under 8 hands, are called miniature horses because they are shaped like small horses, not like ponies. And a **foal** is never a pony just because it is small; it is a young horse that will keep growing until about age five or six.

The hand is a good example of how ordinary people built careful systems of measure. A buyer and a seller who agreed on what “15.2” meant could trade fairly, even in different counties or countries.

PICTURE STUDY



Mares and Foals in a River Landscape, George Stubbs, c. 1763–1768 · Oil on canvas · Tate Britain, London
Wikimedia Commons · Public domain

George Stubbs (1724–1806) was an English painter who studied horses so closely that he spent about eighteen months dissecting horses in a lonely farmhouse and drawing every muscle and bone; his book *The Anatomy of the Horse* came out in 1766. He painted several pictures of mares and foals. In this one, the animals stand side by side, so you can compare their heights almost as if they were lined up against a measuring stick.

Look closely

- Find the withers on two of the mares. Are they at the same height?
- Compare a foal's legs with its mother's. Which is longer for its body size?
- Look at the heads. Are the faces broad and short, like a pony's, or long and fine?

Talk about it

1. Would you call these mares horses or ponies? Give two reasons, using height and build.
2. Why does Stubbs's study of anatomy matter when you look at how he painted legs and shoulders?

Safety first. Measure a real horse or pony only with its owner or an experienced adult holding it on a lead rope. Approach from the front and side where it can see you, speak as you come, never stand directly behind it, and keep your feet clear of its hooves.

HANDS-ON: BUILD A HAND STICK AND MEASURING DIAGRAM

Make your own measuring stick, use it to measure people and things at home, and draw a labelled diagram of how a horse is measured.

You will need

- A yardstick, or a 5-foot strip of stiff cardboard
- A ruler, a marker and masking tape
- A short flat stick or a piece of cardboard for the sliding arm
- A pencil and a notebook page

Steps

1. Starting at 0 at the bottom, draw a long line every 4 inches and number them in hands (1, 2, 3 ...). Draw short lines at each inch between them.
2. Tape the stick upright to a door frame with 0 on the floor. Make a red mark at 14.2 hands (58 inches).
3. Measure each person in your family to the top of the shoulders (their “withers”), using the flat stick held level across the top. Write each height the horseman’s way and in inches, like 11.3 = 47 inches.
4. Measure a table, a chair seat and a pet. Make a chart with three columns: name, hands, inches.
5. Draw the diagram: a horse in side view standing on a straight ground line, with the measuring stick upright beside its front leg and the sliding arm resting on the withers. Label *withers*, *ground line*, *measuring stick*, *sliding arm*, *level* and the *14.2-hand line*. Add a small pony beside it whose withers fall below the line.

Check your work

- My stick has a mark every 4 inches and a line at 14.2 hands.
- My chart shows at least five heights in both hands and inches, all converted correctly.
- My diagram has six labels and shows the stick at the withers, not the head.

FIELD NOTEBOOK

1. **Notebook entry: Horse or pony?** Write one paragraph explaining how to tell a horse from a pony. Use the words *withers*, *hand*, *14.2* and *conformation*, and give one exception.
2. Copy the conversion rule into your notebook: $hands \times 4 + inches = total\ inches$.

Did you know? The tallest horse ever recorded, a Shire named Sampson foaled in England in 1846, stood 21.2½ hands, which is over 7 feet at the withers. Some of the smallest miniature horses are under 7 hands, shorter than many large dogs.

Map or diagram. Your diagram should look like a page from a vet’s handbook: a straight ground line, the horse standing square, the stick upright, and the arm level on the withers. Neat labels with ruler-straight leader lines make it easy to read.

Goes deeper in. Arithmetic, “Measurement and Units,” and Life Science, “Mammals” (coming soon).

For families. Sources: the Fédération Équestre Internationale (FEI) sets its pony limit at 148 cm without shoes (149 cm with shoes); most breed societies use 14.2 hands. Some breeds (Icelandic, Caspian, Arabian, miniature horses) are called horses whatever their height. The hand has long been 4 inches; we have left out a precise date for when it was first fixed by law, since sources differ. Picture: Stubbs painted more than one “mares and foals” scene; the Tate version is described here.

PRACTICE

1. **EASY** A horse stands 15.2 hands. How tall is it in inches?
2. **EASY** Why is a horse measured at the withers and not at the top of its head?
3. **MEDIUM** A grown animal measures 52 inches at the withers. Write its height in hands. Is it a horse or a pony by the usual rule?
4. **MEDIUM** A sale paper lists a horse as “15.5 hands.” What is wrong, and what should it say?
5. **CHALLENGE** A draft horse stands 16.3 hands and a pony stands 12.1 hands. How much taller is the horse, in inches and in hands?

Make it a game • Hands Up!. One player calls a height in inches (for example, 57, 60, 49, 64). Everyone races to write it in hands on scrap paper and hold it up, then shouts “Horse!” or “Pony!” The first correct answer earns a point. Then switch: call heights in hands and race to give inches. Play to ten points.

Scripture. “A just weight and balance are the LORD’s: all the weights of the bag are his work.” (Proverbs 16:11, KJV)

God cares that people measure honestly. A fixed hand of 4 inches let buyers and sellers deal fairly. When you measure a horse, or anything else, measure truly.

Practice: answers

1. 62 inches ($15 \times 4 = 60$, plus 2).
2. Because the head and neck move up and down, but the withers stay in one fixed place, so the measurement is the same every time.
3. $52 \div 4 = 13$ exactly, so 13.0 hands. It is under 14.2, so it is a pony.
4. The number after the point is inches and can only go up to 3. Fifteen hands and 5 inches is 16 hands and 1 inch, so it should say 16.1.

5. $16.3 = 67$ inches and $12.1 = 49$ inches. $67 - 49 = 18$ inches, which is 4 hands and 2 inches, written 4.2 hands.

1.2 THE ARABIAN, HORSE OF THE DESERT

OBJECTIVES

- Locate the Arabian Peninsula and the regions where Bedouin tribes bred horses, and trace on a map how Arabians spread to Europe and America.
- Describe at least four traits of the Arabian and explain how desert life shaped them.
- Explain how the Bedouin kept track of bloodlines and why Arabians influenced so many other breeds.

Warm-up. Look at a map or globe and find the Arabian Peninsula, between the Red Sea and the Persian Gulf. Most of it is desert. Make a list of three things a horse would need to survive and work there, and three things a family would need to do to keep that horse alive.

Video slot. Video coming. The Arabian horse: Bedouin history, breed traits (dished face, high tail carriage), and endurance riding such as the Tevis Cup. Search approved channels (Kentucky Horse Park, Arabian Horse Association, Smithsonian); preview first.

KEY TERMS

Bedouin

The tent-dwelling, traveling herders of the Arabian and Syrian deserts, who bred camels, sheep, goats and prized horses (say “BED-oo-in”).

strain

A family line of Arabian horses, named and traced by the Bedouin through the mares (for example, Kehilan or Seglawi).

dished face

A face with a concave, inward curve between the eyes and the muzzle, a hallmark of the Arabian.

endurance riding

A long-distance sport in which horse and rider cover 50 to 100 miles in a day, with veterinary checks along the way.

foundation breed

A breed whose bloodlines were used to build or improve many later breeds.

CORE IDEAS

The **Arabian** is one of the oldest horse breeds in the world. Its homeland is the Arabian Peninsula, a great wedge of sand and rock between the Red Sea and the Persian Gulf, and the neighboring deserts of Syria. Here the **Bedouin** lived in black goat-hair tents and moved with the seasons to find grass and water. Camels carried the loads, but horses were their treasure, used for swift travel, for raids and for defense.

Desert life was hard on horses, and it shaped them. Water was scarce, food was poor, and nights could be cold. A horse had to be tough, sound and able to travel far on little. It also had to be gentle, because a valuable mare might share the family tent at night and stand among the children. Over many generations, the Bedouin bred only from horses that met these tests.

The Bedouin did not write stud books. Instead, families memorized the ancestry of their horses and recited it, and they traced each family, or **strain**, through the mares. A colt was valued, but a mare of a pure strain was almost never sold. When a horse was traded, a witness might swear to its pedigree.

You can recognize an Arabian by its looks. It has a small head with a **dished face**, a broad forehead, large dark eyes and wide nostrils that help it breathe in hot, dry air. Its neck is arched, its back is short and its tail is carried high like a banner. Many Arabians have 17 pairs of ribs instead of 18, and fewer vertebrae in the lower back and tail. Most stand about 14.1 to 15.1 hands, yet they are always called horses. Common colors are gray, bay, chestnut and black; under the hair, the skin is dark, which protects against the desert sun.

Traders, soldiers and travelers carried Arabians out of the desert to Egypt, Persia, North Africa and Europe. In England, three Eastern stallions became the founders of the Thoroughbred, which is why the Arabian is called a **foundation breed**. In 1878 the English travelers Wilfrid and Lady Anne Blunt began the Crabbet Arabian Stud, and over the next years Lady Anne rode into the deserts herself to buy horses from Bedouin breeders. Arabians reached America too; the Arabian Horse Club of America was founded in 1908.

Today the Arabian's toughness shines in **endurance riding**. In the Tevis Cup, first ridden in 1955, riders cross the Sierra Nevada of California, 100 miles in a single day, and veterinarians check every horse's heart rate along the way. Arabians and part-Arabians win it more often than any other breed.

PICTURE STUDY



Arab Horses Fighting in a Stable, Eugène Delacroix, 1860 · Oil on canvas · Musée d'Orsay, Paris (on deposit from the Musée du Louvre)
Wikimedia Commons · Public domain

In 1832 the French painter Eugène Delacroix traveled to Morocco in North Africa. There he watched two stallions fight, and in a letter home he wrote that the gray horse passed its head under the neck of the other. The scene stayed in his memory for nearly thirty years. He finished this painting in 1860, three years before he died, using bold color and quick brushstrokes to show raw energy.

Look closely

- Find the gray horse. Can you see its fine head and arched neck?
- Find the men. What are they trying to do?
- Follow the swirling lines of manes, tails and bodies. Where is the center of the action?

Talk about it

1. Delacroix painted this from memory decades later. What details might he remember, and what might he imagine?
2. Why must stallions be handled with special care, even in a gentle breed like the Arabian?

Safety first. Arabians are spirited and quick. If you visit an Arabian barn, stay with an adult, move calmly, keep your voice low, and never go into a stall or paddock without permission; stallions in particular are handled only by experienced adults.

HANDS-ON: MAP: FROM THE DESERT TO THE WORLD

Draw a map that shows where the Arabian came from and how it spread.

You will need

- A large sheet of paper and a pencil
- Colored pencils (yellow or tan for desert, blue for water)
- An atlas or online map for reference

Steps

1. Trace or sketch the Arabian Peninsula and the lands around it: Egypt, Syria, Iraq and Persia (Iran), and the Mediterranean coast.
2. Color the desert tan. Color and label the Red Sea, the Persian Gulf, the Arabian Sea and the Mediterranean Sea in blue.
3. Label the Nejd (the central highland of Arabia, famous for its horses) and the Syrian Desert.
4. Draw a tent symbol for the Bedouin. Add a key.
5. Draw arrows from Arabia toward Egypt, North Africa and across the Mediterranean toward England. Add a small inset box in a corner with England and label “Thoroughbred founders, about 1690–1730” and “Crabbet Stud, 1878.”
6. Add a title: “The Arabian Spreads Out of the Desert.”

Check your work

- My map labels four seas and at least four lands.
- My arrows show the Arabian spreading to Europe, with dates in the inset.
- My map has a key and a title.

FIELD NOTEBOOK

1. **Notebook entry: Shaped by the desert.** Write a paragraph explaining how desert life shaped the Arabian. Name at least three traits (body or temperament) and give the reason for each.
2. Sketch an Arabian head in profile and label *dished face*, *large eye*, *wide nostril* and *arched neck*.

Did you know? Gray Arabians are born dark (bay, chestnut or black) and turn lighter every year until they look white. Old gray horses often develop small dark freckles called “flea-bitten” markings. Horsemen still call them gray, not white, because the skin underneath is dark.

Map or diagram. On your map, show how far the Nejd is from the Mediterranean. Use the map’s scale bar to estimate the distance; it is several hundred miles of desert travel.

Goes deeper in. Geography, “The Middle East,” and Life Science, “Mammals: Adapted to Their Homes” (coming soon).

For families. Sources: Arabian Horse Association; Britannica; Western States Trail Foundation (Tevis Cup, founded 1955). The breed’s earliest history is ancient and partly legendary, so this stop gives no exact date for its origin. The rib and vertebra differences are found in many, but not all, Arabians. Lady Anne Blunt’s journeys are told in her books *Bedouin Tribes of the Euphrates* (1879) and *A Pilgrimage to Nejd* (1881). The picture study shows stallions fighting; there is no blood or injury shown.

PRACTICE

1. **EASY** Name the two seas on either side of the Arabian Peninsula.
2. **EASY** Through which parent did the Bedouin trace a horse’s family, or strain?
3. **MEDIUM** Give two physical traits of the Arabian and explain how each helped in the desert.
4. **MEDIUM** An Arabian stands 14.1 hands. By height alone it would be a pony. Why is it still called a horse?
5. **CHALLENGE** In the Tevis Cup, a rider covers 100 miles in 20 hours of riding time. What is the average speed? If a walking horse goes about 4 miles per hour, how many hours would the ride take at a walk the whole way?

Make it a game • Recite the Pedigree. Like the Bedouin, keep a horse’s family by memory. The first player says, “My mare is Sahra.” The next says, “My mare is Sahra, daughter of Nura.” Each player adds one more mother’s name and repeats the whole line. Anyone who forgets a name drops out. The last one left is the tribe’s “keeper of the strain.”

Scripture. “Canst thou make him afraid as a grasshopper? the glory of his nostrils is terrible.” (Job 39:20, KJV)

In Job 39 the Lord points to the horse’s courage and the power of its breath as His own work. The Arabian’s wide nostrils and fearless spirit are part of the design God gave the horse.

Practice: answers

1. The Red Sea (west) and the Persian Gulf (east). (The Arabian Sea lies to the south.)
2. Through the mare (the mother).
3. Possible answers: wide nostrils help it breathe in hot, dry air; dark skin protects against strong sun; a short, strong back and tough legs let it travel far; great endurance lets it go long distances on little water.
4. Because its build, or conformation, is that of a horse (fine legs, proportions, head and body), and breed societies always class Arabians as horses.

5. $100 \div 20 = 5$ miles per hour on average. At 4 miles per hour, $100 \div 4 = 25$ hours. (Riders must finish within 24 hours, so they have to trot and canter for part of the way.)

1.3 THE THOROUGHBRED

OBJECTIVES

- Name the three foundation sires of the Thoroughbred and tell where and when the breed began.
- Trace the line from the Darley Arabian to Eclipse in a family-tree diagram.
- Describe the Thoroughbred's build and explain why it is suited to racing.

Warm-up. Time yourself running 50 yards as fast as you can. Then time yourself running 400 yards. Did you run the long distance at the same speed? What would a horse need to be fast over a mile or more?

Video slot. Video coming. History of the Thoroughbred: the Byerley Turk, Darley Arabian and Godolphin Arabian, Eclipse, and the build of a racehorse. Search approved channels (Kentucky Horse Park, Smithsonian, National Museum of Racing and Hall of Fame); preview first.

KEY TERMS

Thoroughbred

A light, fast, hot-blooded horse breed developed in England in the 1600s and 1700s for racing.

foundation sire

One of the stallions from which a whole breed descends. The Thoroughbred has three.

stud book

The official record of a breed's pedigrees. The Thoroughbred's is the *General Stud Book*, begun in 1791.

pedigree

A horse's family tree: its sire (father), dam (mother) and their ancestors.

hot-blooded

Horseman's word for spirited, sensitive, fast breeds such as the Arabian and Thoroughbred (not their actual body temperature).

CORE IDEAS

In the late 1600s, English noblemen loved horse racing, and they wanted faster horses. They crossed sturdy English racing mares with fine, quick stallions brought from the East: from Turkey, Syria and North Africa. Out of these crosses came a new breed, the **Thoroughbred**, a name meaning "thoroughly bred," or bred with great care.

Every Thoroughbred alive today traces back, through its father's father's line, to one of three **foundation sires**. The **Byerley Turk** was owned by Captain Robert Byerley and is said to

have carried him in battle in Ireland around 1690. The **Darley Arabian** was bought by Thomas Darley in Aleppo, Syria, and arrived in England in 1704. The **Godolphin Arabian** came to England around 1729 and ended up in the stud of the Earl of Godolphin.

The most important descendant was a chestnut colt foaled in 1764, during an eclipse of the sun, and so named **Eclipse**. He was the great-great-grandson of the Darley Arabian. Eclipse raced 18 times and was never beaten; it was said, "Eclipse first, the rest nowhere." Through his sons, more than nine out of ten modern Thoroughbreds trace their male line back to him. To keep records straight, James Weatherby published the first part of the **General Stud Book** in 1791. Since then, a horse can be a Thoroughbred only if both parents are already in the book.

A Thoroughbred is built to run. It stands about 15.2 to 17 hands, with long, slender legs, a deep chest for big lungs and a powerful heart, and long, sloping shoulders that let it reach forward in a great stride. At full gallop a racehorse can reach about 40 miles per hour, and each stride can cover more than 20 feet. Thoroughbreds are **hot-blooded**: brave, eager and sensitive. That makes them wonderful athletes but means they need calm, patient handling.

The breed came early to America. Diomed, winner of the first Epsom Derby in England in 1780, was brought to Virginia in 1798 and became a leading sire. Kentucky, with limestone-rich grass, became the center of American breeding. The Kentucky Derby was first run at Churchill Downs in 1875; since 1896 it has been a mile and a quarter. Every Thoroughbred in the Northern Hemisphere has the same official birthday, January 1, so horses born the same year race against each other as equals.

Not every Thoroughbred races. Many become jumpers, eventers, polo ponies or riding horses, and their blood helped build other breeds, including the Quarter Horse.

PICTURE STUDY



Whistlejacket, George Stubbs, c. 1762 · Oil on canvas · The National Gallery, London
Wikimedia Commons · Public domain

Whistlejacket was a chestnut racehorse owned by the Marquess of Rockingham, and he descended from the Godolphin Arabian. Rockingham asked George Stubbs to paint him life-size, about 9 feet tall. Stubbs left out any landscape or rider, so nothing distracts from the horse itself. The painting hung in Rockingham's house for over two hundred years before the National Gallery bought it in 1997.

Look closely

- Find the deep chest and the long, sloping shoulder. How do they help a racehorse?
- Look at the eye and the flared nostril. What do they tell you about this horse's temper?
- Look at the plain background. How does it make the horse seem bigger?

Talk about it

1. How can you tell from the painting that Whistlejacket is hot-blooded?
2. Why might Stubbs have chosen to paint him rearing instead of standing still?

Safety first. Racehorses and young Thoroughbreds can spook or kick suddenly. At a racetrack or breeding farm, stay behind fences and rails, never feed a horse without permission, and follow every instruction from the staff.

HANDS-ON: DIAGRAM: THE THOROUGHBRED FAMILY TREE

Draw a family tree that shows how the Thoroughbred began.

You will need

- A large sheet of paper turned sideways
- A pencil, a ruler and colored pencils

Steps

1. At the top, draw three boxes side by side: Byerley Turk (c. 1690), Darley Arabian (1704) and Godolphin Arabian (c. 1729). Color each a different color.
2. Under the Darley Arabian, draw a chain of boxes going down: Bartlet's Childers → Squirt → Marske → Eclipse (1764). Join them with arrows labelled "son of."
3. Next to Eclipse, write "unbeaten in 18 races" and "about 95% of modern Thoroughbreds trace their male line to him."
4. Under the Godolphin Arabian, add a box: Whistlejacket (descendant), with a small sketch.
5. At the bottom, draw a wide box labelled "The Thoroughbred today" with arrows from all three founders. Add a box at the side: "General Stud Book, 1791."
6. Add a title and a key showing which color goes with which founder.

Check your work

- My tree shows all three foundation sires with dates.
- My chain from the Darley Arabian to Eclipse has four arrows in the right order.
- My diagram has a title, a key and the date of the General Stud Book.

FIELD NOTEBOOK

1. **Notebook entry: Built for speed.** Write a paragraph describing how a Thoroughbred's body is built for racing. Include its height range, its top speed and at least three body parts that help it run.
2. Draw a small side-view outline of a Thoroughbred and label *deep chest*, *sloping shoulder*, *long legs* and *withers*.

Did you know? Secretariat, one of the greatest American racehorses, had a heart that the veterinarian who examined him estimated at about 22 pounds, more than twice the size of an average horse's heart. You will meet him in Trail C.

Map or diagram. Add a small map to your tree: draw arrows from Turkey, Syria (Aleppo) and North Africa to England to show where the three founders came from.

Goes deeper in. History, "Georgian England," and Life Science, "Heredity and Family Traits" (coming soon).

For families. Sources: The Jockey Club; Weatherbys; Britannica; The National Gallery. The early stories of the foundation sires, such as the Byerley Turk at the Battle of the Boyne, are traditional and partly uncertain, so this stop says "is said to." The Godolphin

Arabian may have been a Barb or Turkoman rather than an Arabian. The “95%” figure comes from a 2005 genetic study of Thoroughbred sire lines. Racing is discussed only as a sport; we have left out wagering on purpose.

PRACTICE

1. **EASY** Name the three foundation sires of the Thoroughbred.
2. **EASY** In what year was Eclipse foaled, and how did he get his name?
3. **MEDIUM** Why does every Thoroughbred in the Northern Hemisphere share a January 1 birthday?
4. **MEDIUM** The Kentucky Derby is $1\frac{1}{4}$ miles. How many feet is that? (1 mile = 5,280 feet)
5. **CHALLENGE** If a racehorse’s stride covers 22 feet, about how many strides does it take to run the 6,600-foot Kentucky Derby?

Make it a game • Pedigree Relay. Write these names on cards: Darley Arabian, Bartlet’s Childers, Squirt, Marske, Eclipse. Shuffle and spread them at one end of the room. Two teams take turns running to pick up the next card in order and lay it in a line. If a runner picks the wrong card, it goes back. The first team to build the family line from the Darley Arabian to Eclipse wins.

Scripture. “I returned, and saw under the sun, that the race is not to the swift, nor the battle to the strong, neither yet bread to the wise, nor yet riches to men of understanding, nor yet favour to men of skill; but time and chance happeneth to them all.” (Ecclesiastes 9:11, KJV)

Even the fastest horse does not always win. Solomon reminds us that speed, strength and skill are gifts, but they do not guarantee success. Our trust rests in God, not in our own gifts.

Practice: answers

1. The Byerley Turk, the Darley Arabian and the Godolphin Arabian.
2. 1764. He was born during an eclipse of the sun.
3. So that horses born in the same year are counted as the same age and race fairly against each other, and records stay simple.
4. $5,280 + 1,320 = 6,600$ feet.
5. $6,600 \div 22 = 300$ strides.

1.4 DRAFT HORSES: CLYDESDALE, SHIRE AND PERCHERON

OBJECTIVES

- Tell the Clydesdale, Shire and Percheron apart by homeland, color and feathering.
- Compare the build of a draft horse with a light riding horse in a labelled diagram.
- Explain the work draft horses did before tractors and where the word “horsepower” came from.

Warm-up. Try pushing a heavy box across the floor while standing tall, then try again leaning low with your feet planted wide. Which works better? A draft horse is built for that low, heavy push into the collar.

Video slot. Video coming. Draft horses at work: Clydesdales, Shires and Percherons plowing, logging or pulling wagons; a draft horse hitch at a fair. Search approved channels (Kentucky Horse Park, Colonial Williamsburg, a living-history farm museum); preview first.

KEY TERMS

draft horse

A large, heavy, strong horse bred to pull plows, wagons and loads (also spelled “draught” in Britain).

cold-blooded

Horseman’s word for calm, steady, heavy breeds such as draft horses.

feather

Long, silky hair on the lower legs that covers the hoof, seen on Clydesdales and Shires.

hitch

A team of horses harnessed together to pull a wagon or plow; also the harness itself.

horsepower

A unit of power defined by James Watt in the 1780s: the work of lifting 33,000 pounds one foot in one minute.

CORE IDEAS

For thousands of years, before engines, the heavy work of farms, roads and cities was done by animals. In Europe, the great horses of the Middle Ages carried knights in armor; later their descendants were bred heavier and calmer for the plow and the wagon. These are the **draft horses**. They stand 16 to 18 hands or more and weigh 1,600 to 2,200 pounds, often twice as much as a riding horse. Horsemen call them **cold-blooded**, meaning gentle and steady, not fiery.

The **Shire** comes from the shires, or counties, of central England. It is the tallest of the three, often 17 hands or more, usually black, bay or gray, with white on the face and legs and thick **feather**. A Shire gelding named Sampson, foaled in Bedfordshire in 1846, stood 21.2½ hands and is the tallest horse on record. Shires pulled brewers' wagons through London streets and canal barges along towpaths. Their breed society began in 1878.

The **Clydesdale** is from the valley of the River Clyde in Scotland. In the 1700s, farmers there crossed local mares with heavy Flemish stallions. The Clydesdale is a little lighter and quicker in its stride than the Shire, usually bay with a broad white blaze and four white legs, and it has a lifting, high-stepping walk that shows off its feather. In 1933 an American brewery bought a team that made the Clydesdale famous in parades.

The **Percheron** comes from Le Perche, a region of northern France west of Paris. Percherons are usually gray or black, with little feather, which keeps their legs clean in muddy fields. Breeders added Arabian blood, giving the Percheron a finer head and livelier step than many drafts. Thousands were shipped to America in the 1800s, and by the early 1900s it was the most common draft breed on American farms.

Look at a draft horse and you see a machine for pulling. Its shoulders are upright to hold the collar, its chest is wide, its legs are short and thick for its height and its hindquarters are huge. A riding horse is built for speed; a draft horse is built to lean into the **hitch** and push. When James Watt wanted to sell his steam engines in the 1780s, he compared them to the mill horses they would replace and invented the unit **horsepower**.

Around 1915 there were over 20 million horses in America, most of them working. Within a few decades tractors and trucks had taken their place, and the draft breeds nearly disappeared. Today their numbers have grown again, kept by farmers who value them, by loggers in steep woods and by families who love to see a six-horse hitch go by.

PICTURE STUDY



The Horse Fair, Rosa Bonheur, 1852-1855 · Oil on canvas · The Metropolitan Museum of Art, New York
Wikimedia Commons · Public domain

Rosa Bonheur (1822-1899) was a French painter famous for her animals. For about a year and a half she visited the horse market on the Boulevard de l'Hôpital in Paris twice a week to sketch. The big gray horses in her painting are Percherons, the draft breed of northern France, brought to market to be sold to farmers and carters. The canvas is more than 16 feet wide, so the horses are almost life-size.

Look closely

- Find a Percheron. Look at its neck, chest and hindquarters. How are they different from a racehorse's?
- Do you see heavy feather on the legs, or clean legs?
- Find the grooms. How do they control such big, strong animals?

Talk about it

1. How does Bonheur make you feel the weight and power of these horses?
2. Why would a farmer in 1855 have cared so much about buying a good draft horse?

Safety first. A draft horse can weigh a ton. Never stand where it could step on you or pin you against a wall, keep your feet out from under its hooves, and stay well clear of a horse in harness and of the wagon or plow behind it.

HANDS-ON: DIAGRAM: DRAFT HORSE AND RIDING HORSE

Draw a side-by-side comparison of a Percheron and a Thoroughbred, to scale.

You will need

- Graph paper or a ruler
- A pencil and colored pencils

Steps

1. Draw a ground line across the page. Let 1 square (or 1 centimeter) stand for 1 hand.
2. On the left, draw a Thoroughbred about 16 hands at the withers: long legs, slim body, sloping shoulder.
3. On the right, draw a Percheron about 17 hands: broad chest, upright shoulder, short thick legs, heavy hindquarters.
4. Label on both: *withers*, *shoulder*, *chest*, *hindquarters*, *leg*. Add *feather* to a small Shire or Clydesdale leg drawn in a box below.
5. Under each horse, write its breed, height and usual weight (Thoroughbred about 1,000 pounds; Percheron about 1,900 pounds).
6. Draw a horse collar on the Percheron and an arrow showing which way it pushes when it pulls.

Check your work

- Both horses are drawn to the same scale on one ground line.
- Each horse has at least five labels and its height and weight.
- I drew and labelled feather in the leg box and the collar with a pull arrow.

FIELD NOTEBOOK

1. **Notebook entry: Three great pullers.** Write a paragraph comparing the Shire, Clydesdale and Percheron. For each, give its homeland, its usual color and whether it has heavy feather.
2. Make a four-column chart: Breed, Homeland, Color, Feather (yes or no).

Did you know? A well-matched pair of draft horses can pull more than twice what each could pull alone, because they share the start and keep a steady rhythm. At county fair horse-pulling contests, teams are tested with a weighted sled.

Map or diagram. Add a small map of Britain and France to your notebook. Mark the shires of central England, the River Clyde in Scotland and Le Perche in France, and label each with its breed.

Goes deeper in. History, “The Industrial Revolution and the Steam Engine,” and Gardening & Animals, “Animals on the Farm” (coming soon).

For families. Sources: Shire Horse Society (founded 1878 as the English Cart Horse Society); Clydesdale Horse Society; Percheron Horse Association of America; Guinness World Records (Sampson). Horse numbers in the United States peaked at a little over 20

million around 1915, with several million mules besides (USDA census figures); round numbers are given here. The horsepower definition follows Watt's own figure of 33,000 foot-pounds per minute. Breed weights vary widely; typical ranges are given.

PRACTICE

1. **EASY** Match each breed to its homeland: Shire, Clydesdale, Percheron.
2. **EASY** What is feather, and which two of the three breeds have a lot of it?
3. **MEDIUM** Name three ways a draft horse's body differs from a Thoroughbred's, and say what each is good for.
4. **MEDIUM** Sampson stood 21.2½ hands. About how tall was he in inches and in feet?
5. **CHALLENGE** A six-horse hitch of Percherons averages 1,900 pounds per horse. What do the six horses weigh together? About how many tons is that? (1 ton = 2,000 pounds)

Make it a game • Steady Team Pull. Tie a long rope to a heavy laundry basket or a sled loaded with books. First, have one player pull it across the floor alone and time it. Then hitch two or three players side by side who must step together on the call "Step!" Does the team pull faster when it keeps a steady rhythm, like a matched draft team? Take turns being the driver who calls the steps.

Scripture. "An horse is a vain thing for safety: neither shall he deliver any by his great strength." (Psalm 33:17, KJV)

Even the mightiest Shire is only a creature. The psalmist reminds us that strength, whether of horses, tractors or armies, cannot save us; our help is in the Lord who made them.

Practice: answers

1. Shire: central England. Clydesdale: the Clyde valley in Scotland. Percheron: Le Perche in northern France.
2. Long hair on the lower legs over the hooves. Shires and Clydesdales.
3. Possible answers: upright shoulder to hold a collar for pulling; wide chest for strength; short, thick legs for power and steadiness; heavy hindquarters to push; much greater weight to lean into a load.
4. $21 \times 4 = 84$, plus $2\frac{1}{2} = 86\frac{1}{2}$ inches, which is about 7 feet $2\frac{1}{2}$ inches.
5. $6 \times 1,900 = 11,400$ pounds, which is 5.7 tons.

1.5 THE AMERICAN QUARTER HORSE AND THE COWBOY

OBJECTIVES

- Explain where the Quarter Horse got its name and trace its journey from colonial Virginia to the Texas ranges.
- Describe “cow sense” and the jobs a ranch horse does with cattle.
- Map a cattle trail and describe the build that makes the Quarter Horse a sprinter.

Warm-up. Mark a line and run a short sprint of about 25 steps, stopping as fast as you can at the end. Then sprint again and turn sharply to the side when someone calls “Turn!” What did your legs have to do to stop and turn quickly?

Video slot. Video coming. The American Quarter Horse: history, cutting horses working cattle, ranch horse skills. Search approved channels (American Quarter Horse Association, National Cowboy & Western Heritage Museum, Kentucky Horse Park); preview first.

KEY TERMS

Quarter Horse

An American breed named for winning races about a quarter of a mile long; the cowboy’s favorite ranch horse.

cow sense

A horse’s natural skill at reading and moving cattle, guessing which way a cow will turn before it does.

cutting

Separating one cow or calf from the herd and keeping it apart; now also a competition.

remuda

The herd of spare saddle horses kept on a ranch or trail drive, from which each cowboy chose fresh mounts (from Spanish).

hindquarters

The back part of a horse, from the loins to the hind legs; the “engine” that drives it forward.

CORE IDEAS

In colonial Virginia and the Carolinas in the 1600s and 1700s, there were few long racecourses. Instead, planters raced their horses down a village street or a straight cleared path, often about a quarter of a mile long. The horses that won these short dashes were stocky and fast off the mark. People began to call them “quarter-milers,” and later **Quarter Horses**. Their ancestors included Spanish horses traded from the south, sturdy English mares and, after 1756, an English racing stallion named Janus who stood in Virginia.

As pioneers moved west, they took these quick horses with them. On the plains they mixed with Spanish mustangs, horses descended from those brought by the conquistadors. In Texas a stallion called Steel Dust, brought there in the 1840s, became so famous that for years a fast short-distance horse was simply called a “Steel Dust.”

After the Civil War, millions of longhorn cattle roamed Texas, and people in the cities of the East wanted beef. From 1867 into the 1880s, cowboys drove huge herds north on trails such as the **Chisholm Trail** to railroad towns like Abilene, Kansas, where the cattle were shipped east by train. Each outfit had a **remuda** of spare horses, and a cowboy might ride several horses in a day. The best of them were the stocky sprinters with **cow sense**.

A good ranch horse watches the cattle with its ears and eyes. In **cutting**, a rider guides the horse into the herd, picks out one calf and then drops the reins: the horse itself blocks the calf, darting left and right, low to the ground, to keep it from rejoining the herd. To do this, a Quarter Horse has powerful **hindquarters**, a short back and strong legs set under its body. It can spring from a stand to a gallop, stop by sliding on its hind legs and spin on its haunches. Over a quarter mile it can reach about 50 to 55 miles per hour, faster than a Thoroughbred over that short distance.

In 1940 ranchers and horsemen met in Fort Worth, Texas, and founded the American Quarter Horse Association to keep records of the breed. The first horse registered was a stallion named Wimpy, from the great King Ranch in South Texas. Today the association has registered millions of horses, and the Quarter Horse is the most numerous breed in the United States. Most stand about 14.3 to 16 hands and are often sorrel (reddish), bay or dun.

Ranchers still use Quarter Horses to gather and sort cattle in rough country where trucks cannot go. The cowboy and his horse remain a working team.

PICTURE STUDY



The Bronco Buster, Frederic Remington, 1895 (modeled); many later casts · Bronze sculpture · Casts in many museums, including the Metropolitan Museum of Art, New York, and the Amon Carter Museum of American Art, Fort Worth
Wikimedia Commons · Public domain

Frederic Remington (1861–1909) traveled in the West as a young man and became famous for his drawings and paintings of cowboys, soldiers and horses. *The Bronco Buster* was his first sculpture. A “bronco” was an unbroken range horse, and a “bronco buster” was the cowboy who first rode it. Remington made the horse balance on its two hind legs, a hard feat in heavy bronze. The sculpture became so loved that hundreds of copies were cast.

Look closely

- Find the horse’s hind legs. How is the whole statue balanced on them?
- Look at the rider’s hands, feet and hat. How is he staying on?
- Look at the horse’s ears and tail. What do they tell you about its mood?

Talk about it

1. Why would a ranch need someone to “break,” or train, young range horses?
2. How is this wild bronco different from a calm, trained Quarter Horse working cattle?

Safety first. Ranch horses and cattle can move suddenly. At a ranch, rodeo or show, stay outside arena fences and pens, never walk among cattle or loose horses, and always wear a properly fitted riding helmet if you ride.

HANDS-ON: MAP: FROM QUARTER-MILE RACES TO THE CATTLE TRAIL

Draw a map that follows the Quarter Horse from the East Coast to the Texas ranges and up the Chisholm Trail.

You will need

- A large sheet of paper and a pencil
- Colored pencils
- A United States map for reference

Steps

1. Sketch the outline of the United States, or of the states from Virginia west to Texas and north to Kansas.
2. Label Virginia and the Carolinas, and draw a small straight racetrack with the words “quarter-mile races, 1600s-1700s.”
3. Draw a dotted arrow west across the South to Texas, labelled “Pioneers take their horses west.”
4. In South Texas, mark San Antonio and the King Ranch. Draw the Chisholm Trail as a heavy line north through Fort Worth and across Indian Territory (now Oklahoma) to Abilene, Kansas. Label it “Chisholm Trail, 1867-1880s.”
5. At Abilene, draw a railroad line heading east, labelled “cattle shipped east by train.”
6. Add a star at Fort Worth: “AQHA founded, 1940.” Add a compass rose, a key and a title.

Check your work

- My map shows Virginia, Texas, the Chisholm Trail and Abilene.
- My map has at least three dates.
- My map has a key, a compass rose and a title.

FIELD NOTEBOOK

1. **Notebook entry: The cowboy’s partner.** Write a paragraph describing what a cutting horse does and what makes the Quarter Horse good at it. Use the words *cow sense*, *hindquarters* and *cutting*.
2. Draw a Quarter Horse in side view and label *hindquarters*, *short back*, *withers* and *strong legs*.

Did you know? The cowboy’s working words came from the Spanish vaqueros of Mexico: *lariat* from *la reata* (the rope), *remuda*, *rodeo* (a roundup) and *chaps* from *chaparreras*, leather leg coverings that protected against thorny brush.

Map or diagram. Use your map’s scale to estimate the length of the Chisholm Trail from San Antonio to Abilene. It was roughly 800 miles of cattle drive, at about 10 to 15 miles a day.

Goes deeper in. History, “The American West and the Cattle Drives,” and Geography, “The Great Plains” (coming soon).

For families. Sources: American Quarter Horse Association; Britannica; Texas State Historical Association (Chisholm Trail, Steel Dust). The early colonial history is pieced together from scattered records, so this stop speaks of “the 1600s and 1700s.” Speeds of about 50–55 mph are commonly cited for a quarter-mile sprint; figures vary. The Chisholm Trail’s length is usually given as about 800 miles from San Antonio to Abilene. The picture study, a rearing horse, shows no injury.

PRACTICE

1. **EASY** Why is the Quarter Horse called by that name?
2. **EASY** In what year and in what city was the American Quarter Horse Association founded?
3. **MEDIUM** What is “cow sense,” and why did cowboys value it?
4. **MEDIUM** A quarter mile is how many feet? (1 mile = 5,280 feet) How many yards?
5. **CHALLENGE** A cattle drive covers the 800-mile Chisholm Trail at 10 miles a day. How many days does it take? About how many weeks?

Make it a game • Cutting the Calf. One player is the “calf” and stands between two cones about ten steps apart. The others are the “herd” behind a line. A “cutting horse” player stands facing the calf. The calf tries to dodge past the horse to reach the herd; the horse must block by sliding left and right, staying low, without touching. If the calf gets by within 30 seconds, switch roles.

Scripture. “Be thou diligent to know the state of thy flocks, and look well to thy herds.” (Proverbs 27:23, KJV)

A good rancher watches his cattle and horses carefully, every day. God calls us to be faithful, attentive keepers of whatever He has given us to care for.

Practice: answers

1. It was famous for winning races about a quarter of a mile long.
2. 1940, in Fort Worth, Texas.
3. A horse’s natural skill at reading cattle and guessing which way they will move. It let the horse block, turn and sort cattle quickly, often without the rider’s directions.
4. $5,280 \div 4 = 1,320$ feet. $1,320 \div 3 = 440$ yards.
5. $800 \div 10 = 80$ days, between 11 and 12 weeks ($80 \div 7 \approx 11.4$), or nearly three months.

1.6 SHETLAND AND WELSH PONIES

OBJECTIVES

- Locate the Shetland Islands and Wales on a map and explain how island and mountain life shaped their ponies.
- Describe the Shetland pony's work in the coal mines after the Mines Act of 1842.
- Name the four sections of the Welsh Pony and Cob Society and their height limits.

Warm-up. Imagine living on a windy, treeless island far out in the North Sea, where winter days have only about six hours of light. What would a small animal need to survive outdoors there all year?

Video slot. Video coming. Shetland ponies on the Shetland Islands and Welsh Mountain ponies in the hills of Wales; pit pony history. Search approved channels (Kentucky Horse Park, National Coal Mining Museum for England, Welsh Pony and Cob Society); preview first.

KEY TERMS

Shetland pony

A very small, strong pony from the Shetland Islands of Scotland, no taller than 42 inches (107 cm) when registered.

pit pony

A pony that worked underground in a coal mine, hauling tubs of coal.

Welsh Mountain Pony

The smallest Welsh type (Section A), a hardy, pretty pony from the hills of Wales, not over 12 hands in Britain.

cob

A short-legged, strong, sturdy riding or driving horse; the Welsh Cob is the largest Welsh section.

hardy

Able to stand hard weather and poor food and stay healthy.

CORE IDEAS

The **Shetland Islands** lie more than 100 miles north of mainland Scotland, where the North Sea meets the Atlantic. There are almost no trees, the wind blows hard and winters are long and dark. Small ponies have lived there for many centuries. With little to eat but rough grass, heather and sometimes seaweed on the shore, only the toughest survived. The result is one of the hardest animals in the world: the **Shetland pony**.

A Shetland is small, often under 10 hands, and registered ponies must be no taller than 42 inches. Unlike other breeds, Shetlands are measured in inches, not hands. They have short legs, a deep body, a short, thick neck and small ears. In winter they grow a double coat and a thick mane and tail that shed rain and snow. For their size they are among the strongest of all horses. Islanders used them to carry peat for fires and seaweed for the fields.

In 1842 the British Parliament passed the Mines Act, which forbade women, girls and boys under ten to work underground in coal mines. Someone still had to haul the coal tubs through low, narrow tunnels, and the small, strong Shetland was ideal. Thousands were shipped south to the mines of England, Scotland and Wales, where they became **pit ponies**. Many lived underground for years, stabled near the coal face and cared for by miners. Laws later set rules for their care, and the last pit ponies in Britain were retired in the late 1900s. The Shetland Pony Stud-Book Society, founded in 1890, is the oldest pony breed society in Britain.

Far to the south, the green hills and moors of Wales are home to another famous pony. The **Welsh Mountain Pony** ran half-wild on the hills for centuries, and the hard winters made it sure-footed, clever and hardy. It has a small head, often slightly dished, large eyes, a high tail and a quick, floating trot. Welsh farmers used the larger Welsh **cob** for plowing, carrying goods to market and riding to chapel on Sunday.

In 1901 breeders formed the Welsh Pony and Cob Society, which today keeps four sections. **Section A**, the Welsh Mountain Pony, is not over 12 hands. **Section B**, the Welsh Pony, is a riding pony not over 13.2. **Section C**, the Welsh Pony of Cob Type, is also not over 13.2 but stockier. **Section D**, the Welsh Cob, is over 13.2 with no upper limit, so many Welsh Cobs are really horse-height.

Both breeds were taken all over the world. In America, Shetlands pulled children's carts and worked on small farms, and Welsh ponies became favorite mounts for young riders learning to jump. Small does not mean weak: these ponies earned their keep.

PICTURE STUDY



Three ponies standing in a field under an oak tree (a Shetland, a Forester and a Welsh pony), John Scott, after a painting by Benjamin Marshall, 1809 · Etching with engraving · Wellcome Collection, London
Wikimedia Commons · CC BY 4.0

Benjamin Marshall (1768–1835) was an English painter of horses and sporting scenes, and John Scott was a skilled engraver who copied paintings onto metal plates so they could be printed many times. This print shows three ponies side by side: a Shetland, a Forester (from the New Forest in southern England) and a Welsh pony. The words printed under it say that the Welsh pony had run from London to Exeter against the mail coach. It is a kind of breed chart made two hundred years ago.

Look closely

- Which pony is the Shetland? How can you tell?
- Compare the three ponies' legs, necks and heads. List two differences.
- An engraving is made only of lines. How does the artist show shadow and a thick coat?

Talk about it

1. Why would a buyer in 1809 find a print like this useful?
2. The Welsh pony raced a mail coach for over 150 miles. What does that tell you about the breed?

Safety first. Small does not mean harmless: ponies can nip, kick and be stubborn. Approach a pony calmly from the side, offer treats only flat on an open palm with the owner's permission, and never stand behind it.

HANDS-ON: MAP: PONIES OF BRITAIN

Draw a map of the British Isles that shows where these ponies came from and where the Shetlands went to work.

You will need

- A sheet of paper and a pencil
- Colored pencils
- An atlas or online map for reference

Steps

1. Sketch Great Britain, with Scotland, England and Wales. Draw the Orkney Islands and, farther north, the Shetland Islands. (If they do not fit, draw Shetland in a box in the corner, as many real maps do.)
2. Label the North Sea and the Atlantic Ocean.
3. Color Wales green and draw small hills; label “Welsh Mountain Pony.” Color Shetland brown; label “Shetland pony.”
4. Mark a few coalfields with black dots: South Wales, Northumberland and Durham, Yorkshire and central Scotland. Draw arrows from Shetland to these coalfields, labelled “pit ponies after 1842.”
5. In a corner, draw a height chart: bars for a Shetland (42 inches = 10.2 hands), Welsh Section A (12 hands), Sections B and C (13.2 hands) and Section D (over 13.2). Add a dotted line at 14.2 hands.
6. Add a title, a key and a compass rose.

Check your work

- My map shows Shetland, Wales and at least three coalfields.
- My height chart has four bars and the 14.2-hand line.
- My map has a title, a key and a compass rose.

FIELD NOTEBOOK

1. **Notebook entry: The pit pony.** Write a paragraph about why Shetland ponies were sent into the coal mines after 1842 and what their work was like. Use the words *hardy* and *pit pony*.
2. Copy the four Welsh sections with their height limits into your notebook.

Did you know? Miners often grew fond of their ponies, gave them names and saved bits of their lunch for them. Many mines brought the ponies up to the surface for a holiday in the fields during the miners’ summer break.

Map or diagram. Measure on your atlas how far Lerwick, the main town of Shetland, is from Aberdeen on the Scottish mainland. It is about 200 miles by sea, a long journey for a

pony on its way south.

Goes deeper in. Geography, “The British Isles,” History, “The Industrial Revolution,” and Gardening & Animals, “Caring for Animals” (coming soon).

For families. Sources: Shetland Pony Stud-Book Society (founded 1890; height limit 42 in / 107 cm); Welsh Pony and Cob Society (founded 1901); National Coal Mining Museum for England; Wellcome Collection (print, Public Domain Mark). The Mines and Collieries Act 1842 banned all women and girls, and boys under ten, from underground work. In the United States, the Welsh Pony and Cob Society of America allows Section A ponies up to 12.2 hands. The exact date of the last working pit pony is reported differently by different sources, so the stop says “the late 1900s.” The claim that Shetlands are among the strongest horses for their size is widely made but hard to measure exactly.

PRACTICE

1. **EASY** In what unit are Shetland ponies measured, and what is the tallest a registered Shetland may be?
2. **EASY** What law sent many Shetland ponies to work in the coal mines, and in what year?
3. **MEDIUM** Change 42 inches into hands. How far below the 14.2-hand pony line is that?
4. **MEDIUM** Name the four sections of Welsh ponies and cobs and give each one’s height rule (British standard).
5. **CHALLENGE** Explain how the weather and food of the Shetland Islands shaped the Shetland pony. Give at least three traits and the reason for each.

Make it a game · Pit Pony Haul. Make a low “tunnel” by draping a blanket over two rows of chairs. Load a small box or toy wagon with “coal” (socks, blocks or crumpled paper). Players take turns crawling through the tunnel pulling the load on a string, then unloading it at the “pit head.” Time each run. Talk about why a small, strong pony was better in a low tunnel than a tall horse.

Scripture. “In that day shall there be upon the bells of the horses, HOLINESS UNTO THE LORD; and the pots in the LORD'S house shall be like the bowls before the altar.” (Zechariah 14:20, KJV)

Zechariah foresaw a day when even common things like horses’ bells and cooking pots would be holy to the Lord. Ordinary, hidden work, like a pony hauling coal in the dark, matters to God when it is done faithfully.

Practice: answers

1. In inches; no taller than 42 inches.
2. The Mines Act of 1842, which forbade women, girls and young boys from working underground.

3. $42 \div 4 = 10$ with 2 left over, so 10.2 hands. 14.2 is 58 inches; $58 - 42 = 16$ inches, or exactly 4 hands, below the line.
4. A: Welsh Mountain Pony, not over 12 hands. B: Welsh Pony, not over 13.2. C: Welsh Pony of Cob Type, not over 13.2. D: Welsh Cob, over 13.2 with no upper limit.
5. Possible answers: small size, because there was little food and a small body needs less; thick double coat and heavy mane and tail, to shed wind, rain and snow; short legs and deep body, which hold heat; hardiness and strength, because only tough ponies survived to have foals; ability to eat rough grass, heather and seaweed.

1.7 THE CHINCOTEAGUE PONY AND THE ASSATEAGUE HERD

OBJECTIVES

- Locate Assateague and Chincoteague Islands and draw the route of the annual pony swim.
- Explain how the two Assateague herds are managed, who owns them and why their numbers are limited.
- Compare the legend and the likely history of how horses came to Assateague, and explain how the island shaped the ponies.

Warm-up. Find the Delmarva Peninsula on a map of the East Coast; its name comes from Delaware, Maryland and Virginia. Look for the long, thin island along its Atlantic shore. What do you think horses would eat and drink on a sandy island by the sea?

Video slot. Video coming. The Chincoteague Pony Swim and the wild horses of Assateague Island. Search approved channels (U.S. Fish and Wildlife Service, National Park Service, Smithsonian); preview first.

KEY TERMS

barrier island

A long, narrow island of sand lying parallel to the mainland, which shelters the coast from ocean waves.

feral

Living wild, but descended from tame animals.

Pony Penning

The yearly roundup in late July when the Virginia herd swims from Assateague to Chincoteague and some foals are sold.

slack tide

The short, still time between the incoming and outgoing tide when the water barely moves.

wildlife refuge

Land set aside by the government to protect wild animals and their homes.

CORE IDEAS

Assateague Island is a **barrier island** about 37 miles long, off the Atlantic coast of Maryland and Virginia. It is a world of beach, dunes, pine woods and salt marsh. Bands of small, shaggy horses roam it, grazing on marsh grass and beach grass. Just west of its southern end, across a narrow channel, lies the town of Chincoteague, Virginia, where people have lived by fishing, oystering and farming for generations.

How did horses get there? A favorite legend says they swam ashore from a Spanish galleon wrecked off the coast. It is a good story, but historians think a plainer answer is more likely. In the late 1600s, colonists on the mainland were required to fence their livestock and pay taxes on them, so some turned their horses, cattle and sheep loose on the islands, where the sea made a natural fence. Over three hundred years, those horses became **feral**.

Island life changed them. Salty marsh grass and poor forage kept the horses small, usually 12 to 13 hands, so they are called ponies, even though they are horses by ancestry. Because they eat so much salt, they drink about twice as much water as other horses, which gives them their round, barrel-shaped bellies. They are tough enough to live through storms, winter wind and summer mosquitoes.

A fence now runs across the island at the Maryland-Virginia line, dividing two herds. The Maryland herd lives in Assateague Island National Seashore and is managed by the National Park Service as wild animals; visitors may watch, but not feed or touch them. The Virginia herd lives in the Chincoteague National **Wildlife Refuge**, set up in 1943, and is owned by the Chincoteague Volunteer Fire Company. The fire company holds a grazing permit from the U.S. Fish and Wildlife Service that allows a herd of up to about 150 adult ponies, so the marshes are not overgrazed.

To keep the herd at that size, the fire company holds **Pony Penning** every July. Volunteer riders called “saltwater cowboys” round up the herd. On the last Wednesday of July, at **slack tide**, the ponies swim across Assateague Channel to Chincoteague, a swim of only a few minutes, while thousands of people watch from the shore and from boats. The first foal to come ashore is crowned King or Queen Neptune. The next day many foals are sold at auction, and the money pays for fire engines and the herd’s veterinary care. The adults swim back to Assateague soon after. The swim was first held as a fire company event in 1925.

Veterinarians check the ponies at the roundups. In this way a small town keeps a wild herd healthy, protects the island and keeps its fire company running.

PICTURE STUDY



Wild Horses at Play, George Catlin, 1834–1837 · Oil on canvas · Smithsonian American Art Museum, Washington, D.C.

Wikimedia Commons · Public domain

George Catlin (1796–1872) traveled the American West in the 1830s to paint the Plains Indians and the land they lived on. In 1834 he rode with U.S. Army dragoons onto the southern plains and sketched herds of wild mustangs. Back in his studio he finished this painting. Like the Assateague ponies, these horses were descended from tame Spanish horses and had gone back to living wild.

Look closely

- Count the horses. How many different colors can you find?
- Find a horse rearing, one running and one standing still.
- Look at the land. How is the prairie like Assateague’s marshes, and how is it different?

Talk about it

1. How do these horses act like a herd? Who seems to be leading?
2. Catlin sketched quickly and finished later. What would be hard about painting wild horses from life?

Safety first. The Assateague horses are wild and can kick and bite. The Park Service asks visitors to stay at least 40 feet (about a bus length) away, never feed them, and keep food closed up. If you watch the Pony Swim, stay behind the marked areas and listen to the fire company.

HANDS-ON: MAP: THE PONY SWIM

Draw a map of Assateague and Chincoteague and the route of the yearly swim.

You will need

- A sheet of paper and a pencil
- Colored pencils (blue, tan, green)
- An online map of Chincoteague and Assateague for reference

Steps

1. In a small box in the corner, draw the Delmarva Peninsula and mark where your main map is.
2. On the main map, draw the long, thin shape of Assateague Island running north-south, with the Atlantic Ocean on the east. Draw Chincoteague Island to the west of its southern end, and the mainland farther west.
3. Color water blue, beaches tan and marsh green. Label the Atlantic Ocean, Chincoteague Bay, Assateague Channel, Assateague Island, Chincoteague Island and the mainland.
4. Draw a heavy line across Assateague at the state line and label it "Maryland-Virginia fence." Label the northern part "Assateague Island National Seashore (Maryland herd)" and the southern part "Chincoteague National Wildlife Refuge (Virginia herd)."
5. Draw an arrow across Assateague Channel and label it "Pony swim, last Wednesday in July." Draw a small pen on Chincoteague labelled "carnival grounds and auction."
6. Add a compass rose, a scale bar marked "about 37 miles" along the island, a key and a title.

Check your work

- My map labels both islands, the channel, the ocean and the bay.
- My map shows the state-line fence and which agency manages each herd.
- My swim arrow, compass rose, scale and title are all there.

FIELD NOTEBOOK

1. **Notebook entry: One island, two herds.** Write a paragraph explaining how the Maryland and Virginia herds are cared for differently and why the Virginia herd is kept to about 150 adults.
2. Write two sentences: one giving the shipwreck legend, and one giving the more likely history.

Did you know? Most foals sold at the auction go home with their buyers. A few are "buy-back" foals: the buyer pays for the foal and gets to name it, but it is given back to the fire company and returns to the island to live wild and keep the herd strong.

Map or diagram. Look closely at a satellite map: the southern tip of Assateague keeps growing and curving as storms and currents move sand. Barrier islands are always changing shape.

Goes deeper in. Earth Science, “Coasts and Barrier Islands,” and Geography, “The Atlantic Coast” (coming soon). The famous book about a Chincoteague pony comes in Trail D.

For families. Sources: Chincoteague National Wildlife Refuge (U.S. Fish and Wildlife Service); Assateague Island National Seashore (National Park Service); Chincoteague Volunteer Fire Company. Records of pony roundups go back long before 1925; the fire company’s carnival and swim began in the mid-1920s (some sources date the first official Pony Penning Day to 1924). The herd’s origin is uncertain; the shipwreck story is a legend, and the colonial-livestock explanation is the one most historians favor. Herd sizes change year by year. Marguerite Henry’s *Misty of Chincoteague* (1947) is covered at Stops D4 and D5.

PRACTICE

1. **EASY** Who owns the Virginia herd of Assateague ponies?
2. **EASY** Why do the ponies have round, barrel-shaped bellies?
3. **MEDIUM** Why is the swim held at slack tide?
4. **MEDIUM** Give the legend and the likely history of how horses came to Assateague.
5. **CHALLENGE** The Virginia herd has 150 adults in the spring and about 60 foals are born. If the herd must stay at 150 adults and about 5 older ponies die over the year, how many young ponies need to be sold or otherwise removed so that the herd is back to 150 when the foals grow up?

Make it a game · Slack Tide Crossing. Lay two ropes on the ground as the banks of Assateague Channel. One player is the “tide,” who calls “Flood!”, “Ebb!” or “Slack!” The other players are ponies on the Assateague side. They may cross only on “Slack!” Anyone who steps into the channel on “Flood” or “Ebb” is swept back to start. The first pony to reach Chincoteague is crowned King or Queen Neptune and becomes the next tide.

Scripture. “Who hath sent out the wild ass free? or who hath loosed the bands of the wild ass?” (Job 39:5, KJV)

God reminded Job that He cares for the wild animals that live beyond human fences. The Assateague ponies live free on their island, yet they too are His, and He has given people the duty of caring for them wisely.

Practice: answers

1. The Chincoteague Volunteer Fire Company.

2. They eat so much salty marsh grass that they drink about twice as much water as other horses, which makes them look bloated.
3. Because at slack tide the water is calm and barely moving, so the ponies, especially the foals, are not swept away by a strong current.
4. Legend: they swam ashore from a wrecked Spanish galleon. Likely history: in the late 1600s, mainland colonists turned livestock loose on the islands to avoid fencing laws and taxes, and the horses became feral.
5. $150 - 5 = 145$ adults remain, so only 5 foals are needed to bring it back to 150. $60 - 5 = 55$ young ponies need to be sold or removed. (In real life the fire company also keeps some buy-back foals, and the numbers change every year.)

1.8 COLORS AND MARKINGS: BAY, CHESTNUT, PALOMINO, BLAZE, STAR AND SOCK

OBJECTIVES

- Identify the main horse colors (bay, chestnut, black, gray, palomino, buckskin, dun, roan and pinto) by body color and “points.”
- Name and draw the face markings (star, strip, snip, blaze, bald face) and leg markings (coronet, pastern, sock, stocking).
- Explain why horsemen record colors, markings and whorls on a horse’s papers.

Warm-up. Look at three horse pictures in a book or online. Before you learn any names, describe each horse’s color in your own words, including the mane, tail and lower legs. Are the legs the same color as the body?

Video slot. Video coming. Horse coat colors and white markings explained (bay, chestnut, palomino, star, blaze, sock, stocking). Search approved channels (Kentucky Horse Park, a Pony Club or 4-H channel, a university extension equine program); preview first.

KEY TERMS

points

The mane, tail, lower legs and ear rims of a horse. Whether the points are black is a key to naming its color.

bay

A reddish-brown body with black points.

chestnut

A red or copper body with no black at all; mane and tail the same color or lighter (called “sorrel” in Western riding).

palomino

A golden body with a white or cream mane and tail: a chestnut horse lightened by one cream gene.

blaze

A wide white stripe running down the face from the forehead to the nose.

CORE IDEAS

Every horse has a color, and horsemen have names for each one. Underneath all the variety are two basic colors made by pigment in the hair: black and red. Other genes then decide where the black shows, lighten the coat or add white. To name a color, first look at the body, then look at the **points**: the mane, tail, lower legs and rims of the ears.

A **bay** has a brown or reddish-brown body and black points; it is the most common color of all. A **chestnut** is red or copper all over with no black anywhere, though the mane and tail may be paler, even flaxen. A **black** horse is black all over, including the muzzle. A **gray** is born dark and lightens each year, until an old gray looks white; under the hair its skin is dark. The famous racehorse Eclipse was a chestnut, and so was Whistlejacket.

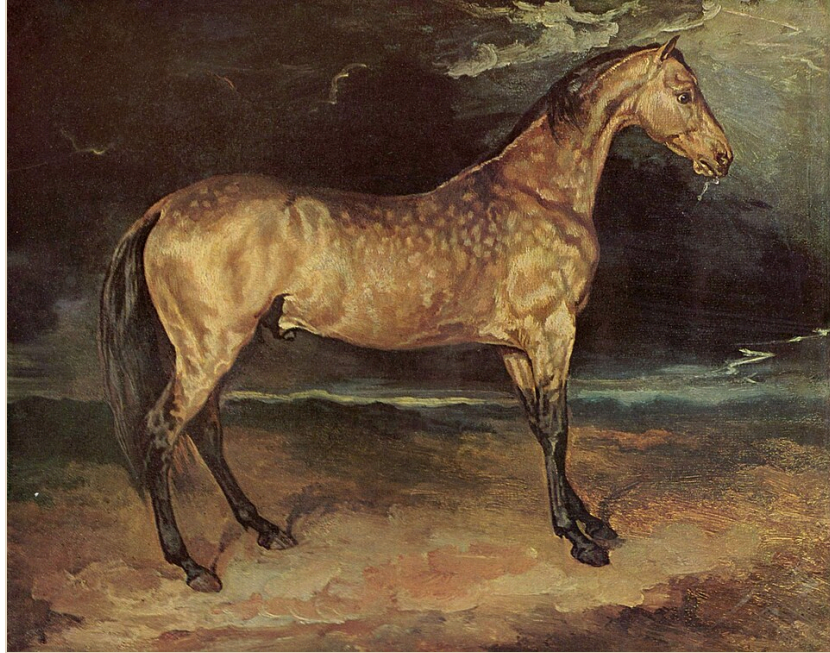
Some colors come from a “cream” gene that lightens red hair to gold. One cream gene on a chestnut makes a **palomino**: a coat like a new gold coin, with a white or cream mane and tail. One cream gene on a bay makes a **buckskin**: a tan body with black points. A **dun** also has a tan or mouse-colored body, but it always has a dark stripe down the middle of its back and sometimes faint stripes on its legs, a pattern also seen in wild horses. A **roan** has white hairs mixed evenly through its colored coat, while its head and legs stay dark. A **pinto** has large patches of white and color, and the Appaloosa is known for its spots.

Then come the white **markings**, which do not change with age. On the face, a small white spot on the forehead is a **star**. A narrow white line down the face is a **strip** (or stripe). A white mark between the nostrils is a **snip**. A wide white stripe from forehead to nose is a **blaze**, and white covering most of the face is a **bald face**. On the legs, a thin white ring just above the hoof is a **coronet**, white to the pastern is a **pastern** marking, white up to or just above the fetlock is a **sock**, and white reaching to the knee or hock is a **stocking**. Under white hair the skin is pink, and the hoof below a white leg is often pale.

Why do these names matter? A horse’s registration papers, passport or bill of sale includes a diagram: an outline of a horse from both sides, front and back, with every white marking drawn in and every **whorl**, a little swirl of hair like a cowlick, marked with an X. No two horses have exactly the same pattern, so the diagram works like a fingerprint. It helps prove which horse is which at a sale, a show or a vet’s office, and it has helped return many stolen horses.

So a horseman can describe a horse in one breath: “a bay mare, 15.2, with a star, a snip and two hind socks.” Anyone who knows the words can pick her out of a field.

PICTURE STUDY



Horse Frightened by Lightning, Théodore Géricault, c. 1813-1814 · Oil on canvas · The National Gallery, London
Wikimedia Commons · Public domain

Théodore Géricault (1791-1824) was a French painter who loved horses all his short life; he rode, sketched in stables and painted horses in every mood. Here a single horse stands in a wide, dark plain as lightning cuts the sky. Géricault uses the light to pick out the horse's coat against the shadowy land, so color and light are the whole story of the picture.

Look closely

- Name this horse's color using the words from this stop. Look at the body first, then at the mane, tail and lower legs.
- Do you see any white markings on the face or legs? Name them, or say why you cannot tell.
- Find where the light falls on the horse. How does it make the coat look different from place to place?

Talk about it

1. How does the horse's body show that it is frightened?
2. Why is it sometimes hard to name a horse's color in a painting or in poor light? What should a careful horseman do?

Safety first. When studying a real horse's markings, look from the side and front with its handler holding it. To see the hind legs, step well out to the side rather than walking behind the horse, and never crouch under it to look at its legs.

HANDS-ON: DIAGRAM: A HORSE'S IDENTIFICATION CHART

Draw an identification chart like those on real horse papers, for a real horse or one you invent.

You will need

- A sheet of paper and a pencil
- Colored pencils
- A photo of a real horse (from a book, a website or a horse you know), or your own imagination

Steps

1. Draw four simple outlines: the horse's left side, its right side, its face from the front and its legs from behind.
2. Choose or observe a color. Write it at the top, with sex, height and breed, like this: "Bay gelding, 15.2 hands, Quarter Horse."
3. Draw every white marking in its place. Label each with its proper name: *star*, *strip*, *snip*, *blaze*, *coronet*, *sock* or *stocking*.
4. Mark at least two whorls with a small X, for example on the forehead and the neck.
5. On the side outline, label the *points*: mane, tail, lower legs and ear rims, and say whether they are black.
6. Under the chart, write a one-sentence description a stranger could use to find this horse in a field.

Check your work

- My chart has four views and the color, sex, height and breed at the top.
- Every white marking is drawn and labelled with the right name.
- I marked whorls and wrote a one-sentence description.

FIELD NOTEBOOK

1. **Notebook entry: Reading a horse.** Write a paragraph explaining how to tell a bay from a chestnut and a palomino from a buckskin. Use the word *points*.
2. Draw a row of five small horse faces and label them *star*, *strip*, *snip*, *blaze* and *bald face*. Under them, draw four small legs labelled *coronet*, *pastern*, *sock* and *stocking*.

Did you know? An old horseman's rhyme says: "One white foot, buy him; two white feet, try him; three white feet, look well about him; four white feet, go without him." It came from a worry that white hooves were weaker. Farriers today say a hoof's color does not make it stronger or weaker; good care and good breeding do.

Map or diagram. Your identification chart is a real kind of diagram. Breed registries, vets and the passports that horses carry when they travel to shows use the same four

views.

Goes deeper in. Life Science, “Heredity: How Traits Are Passed On,” and Art, “Color and Light” (coming soon).

For families. Sources: University of California, Davis, Veterinary Genetics Laboratory (coat-color genes); American Quarter Horse Association color chart; The Pony Club. Terms vary a little between English and Western riders and between countries (for example, “strip” versus “stripe,” “chestnut” versus “sorrel,” and how high a sock goes). The picture study’s horse is described by the student; we have not named its color for them. The old rhyme is folklore, included as history, not advice.

PRACTICE

1. **EASY** What are a horse’s points?
2. **EASY** What is the difference between a star and a blaze?
3. **MEDIUM** Two horses both have reddish-brown bodies. One has a black mane, tail and lower legs; the other has a red mane and tail and red legs. Name each color.
4. **MEDIUM** How are a palomino and a buckskin alike, and how are they different?
5. **CHALLENGE** A sale paper says: “Gray mare, 4 years old, born black, with a white star.” Ten years later, a buyer sees an almost white mare with no visible star. Could it be the same horse? How could the buyer check?

Make it a game • Find My Horse. Each player secretly writes a one-sentence horse description on a card, such as “chestnut gelding with a blaze and two hind socks.” Shuffle the cards. One player draws a card and reads it aloud; everyone races to draw that horse in 60 seconds. Compare drawings: whose matches the description best? The writer of the card is the judge.

Scripture. “I saw by night, and behold a man riding upon a red horse, and he stood among the myrtle trees that were in the bottom; and behind him were there red horses, speckled, and white.” (Zechariah 1:8, KJV)

In Zechariah’s vision, God showed horses of different colors, red, speckled and white, sent out to walk through the earth. The Bible names horse colors too. The variety of coats and markings is part of the beauty of God’s creation.

Practice: answers

1. The mane, tail, lower legs and rims of the ears.
2. A star is a small white spot on the forehead; a blaze is a wide white stripe running down the face from forehead to nose.
3. The one with black points is a bay; the one with no black is a chestnut.
4. Both have one cream gene that lightens the coat to gold or tan. A palomino is a lightened chestnut, with a white or cream mane and tail; a buckskin is a lightened bay, with black

points.

5. Yes. Grays lighten with age, so a white star can disappear into a white coat. The buyer should check the whorls marked on her papers, since whorls do not change, along with height, any brands or microchip, and other leg or face markings that may still show on pink skin.

TRAIL 1 BADGE QUIZ

The badge quizzes are optional. The student answers in writing, alone, with no book. Four right out of five earns the first badge; four right out of six earns the second. Badges and the certificate are earned by doing the stops, not by scores; use any wrong answer as a reason to reread that stop.

Badge quiz 1 (Stops 1-5)

1. A grown animal measures 57 inches at the withers. Write its height in hands and say whether it is a horse or a pony by the usual rule.
2. Give two traits of the Arabian and explain how desert life shaped one of them.
3. Name the three foundation sires of the Thoroughbred. Which one was the ancestor of Eclipse?
4. Name the homeland of the Clydesdale, Shire and Percheron, and tell which one usually has little feather.
5. Why is the Quarter Horse so good at cutting cattle?

Badge quiz 2 (Stops 6-8)

6. Why were Shetland ponies sent into British coal mines after 1842?
7. Which Welsh section has no upper height limit, and what is it called?
8. Who owns the Virginia herd on Assateague, and why are foals sold every July?
9. Why is the pony swim held at slack tide?
10. How do you tell a bay from a chestnut?
11. Name one face marking and one leg marking, and describe each.

TRAIL CERTIFICATE: MY BREED FIELD GUIDE AND TRAIL A CERTIFICATE

Make a breed trading card for each of the eight stops: a drawing on the front and, on the back, the breed's homeland, height range, usual colors, what it was bred for and one date. Stop A1's card explains hands and the 14.2-hand line; Stop A8's card shows colors and markings.

Gather your maps and diagrams (the measuring diagram, the Arabian map, the Thoroughbred family tree, the draft-horse comparison, the cattle-trail map, the ponies-of-Britain map, the pony-swim map and the identification chart) into the Field Notebook, behind a title page: "My Breed Field Guide," with your name and dates.

Write one final paragraph: Which breed would you choose for a job you might do (riding a long trail, farming, ranching, a child's first pony), and why? Use at least three facts from the trail. When the guide is done, a parent signs the Trail A certificate.

- **Accuracy:** Facts, dates, heights and conversions on the cards and diagrams are correct.
- **Maps and diagrams:** Each map or diagram has a title, clear labels, and a key or compass rose where needed.

- **Writing:** Notebook entries and the final paragraph are complete paragraphs that use the stop's key terms correctly.
- **Care and neatness:** Work is neat, complete and gathered in order, with every stop represented.

Answer key

1. $57 \div 4 = 14$ with 1 left over, so 14.1 hands. That is under 14.2, so it is a pony (unless it is a breed like the Arabian that is always called a horse).
2. Any two: dished face, wide nostrils, large eyes, arched neck, high tail, short back, great endurance, gentle temper, dark skin. For example, wide nostrils and endurance helped it travel far in hot, dry air on little water.
3. The Byerley Turk, the Darley Arabian and the Godolphin Arabian. Eclipse descended from the Darley Arabian.
4. Clydesdale: the Clyde valley, Scotland. Shire: central England. Percheron: Le Perche, France. The Percheron has little feather.
5. It has cow sense and a powerful build, with strong hindquarters and a short back, so it can sprint, stop and turn very quickly to block a calf.
6. The Mines Act of 1842 forbade women, girls and boys under ten to work underground, and small, strong Shetlands could haul coal tubs through low tunnels.
7. Section D, the Welsh Cob.
8. The Chincoteague Volunteer Fire Company. Foals are sold to keep the herd at about 150 adults allowed by the grazing permit, so the island is not overgrazed, and the money supports the fire company and the ponies' care.
9. Because the water is calm and barely moving then, so the ponies are not swept away by the current.
10. A bay has black points (mane, tail, lower legs); a chestnut has no black at all.
11. Face: star (white spot on the forehead), strip, snip, blaze (wide stripe down the face) or bald face. Leg: coronet (white ring above the hoof), pastern, sock (white to about the fetlock) or stocking (white to the knee or hock).

HORSES TRAIL B: RIDING AND CARE

The second trail of the Horses track teaches what a horseman must know before and after the ride: the points of the horse, saddle, bridle and bit, grooming step by step, hooves and the farrier, feeding with hay, grain and water, the four gaits and Muybridge's famous photographs, the safety rules every barn lives by, and the English and Western traditions, with dressage, show jumping and barrel racing.

This is the ● **Ranger** level, for ages 10 to 13. The student reads each stop alone, in about 25 to 35 minutes, and does the project, the practice questions and a short Field Notebook entry. Every stop stands by itself and adds a labelled diagram to the notebook: a parts-of-the-horse poster, a tacked-up horse, a grooming map, a hoof diagram, a costed daily care chart, footfall charts, a safety-zones map and two arena plans. No horse is needed; where a stop offers hands-on practice with a real horse, an experienced adult must be present.

Five stops earn the **Horse Ranger badge, part 1**; eight stops earn part 2 and the **Trail B certificate**. The badge quizzes at the end are optional review.

BEFORE YOU BEGIN

- Read about 500 words of nonfiction alone and write a paragraph about it.
- Multiply and divide with fractions and decimals, and work out a simple percent (a parent may help with the challenge questions).

MASTERY CHECKLIST

- ☐ I can label at least fifteen points of the horse and the main parts of a saddle and bridle.
- ☐ I can list the grooming tools in order and explain how to care for hooves between farrier visits.
- ☐ I can work out a horse's daily hay and water needs and cost out a month of care.
- ☐ I can describe the beats and speeds of the walk, trot, canter and gallop and tell what Muybridge proved.
- ☐ I can explain the rules for approaching, leading and tying a horse safely, and compare English and Western riding.

OPTIONAL BOOKS AND RESOURCES

- **Kentucky Horse Park: International Museum of the Horse** (<https://kyhorsepark.com>): Exhibits and articles on horse care, tack and riding sports; good for every stop.
- **United States Pony Clubs** (<https://www.ponyclub.org>): Free safety and horse-care information; *The USPC Manual of Horsemanship* (D level) is often found at the library.
- **4-H Horse Program** (<https://4-h.org>): Free project ideas and links to state extension horse guides on feeding, safety and grooming.

- **Library of Congress** (<https://www.loc.gov>): Search “Muybridge Horse in Motion” for high-resolution images of the 1878 photographs for Stop B6.

2.1 PARTS OF THE HORSE

OBJECTIVES

- Name and point to at least fifteen “points of the horse,” from poll to hoof.
- Compare a horse’s knee and hock with the human wrist and ankle.
- Explain how the place of a horse’s eyes gives it wide vision and two blind spots.

Warm-up. Stand up and rise onto the tips of your toes. Now imagine walking like that all day on just your middle finger and toe. That is close to how a horse stands. Before you read, guess: where on a horse is its “knee”?

Video slot. Video coming. Points of the horse: labelled parts from poll to hoof, horse leg anatomy compared with human anatomy. Search approved channels (Kentucky Horse Park, United States Pony Clubs, 4-H, a university extension horse program); preview first.

KEY TERMS

points of the horse

The standard names horsemen use for the outside parts of a horse, such as poll, withers, croup, hock and fetlock.

poll

The top of the head, just behind the ears, where the bridle’s crownpiece rests.

hock

The large, sharp-angled joint halfway down the hind leg. It matches the human ankle.

fetlock

The round joint just above the pastern and hoof, sometimes called the ankle; it often has a tuft of hair behind it.

conformation

The way a horse is built: the shape, angles and balance of its body and legs.

CORE IDEAS

A rider, a veterinarian, a farrier and a buyer all need to talk about the same horse without confusion. So, over hundreds of years, horsemen agreed on names for every part of the outside of the horse, called the **points of the horse**. When a vet writes “small cut above the off hock,” everyone knows exactly where to look. Horsemen also call the horse’s left side the **near side** and its right side the **off side**, because most handling is done from the left.

Start at the head. The **poll** is the top of the head just behind the ears. The **forelock** is the lock of mane that falls over the forehead, and the soft nose and lips are the **muzzle**. A horse’s eyes are the largest of any land mammal, and they sit on the sides of the head. That

lets a horse see almost all the way around itself while grazing, a gift for an animal that must watch for danger. But it leaves two **blind spots**: one just in front of and below its nose, and one directly behind it.

Next comes the neck and body. The top line of the neck is the **crest**. The **withers** are the high point where the neck meets the back. Behind them come the **back**, the **loin** (just behind where the saddle sits) and the **croup**, the top of the hindquarters. The tail grows from the **dock**. The round middle, built over the ribs, is the **barrel**; most horses have 18 pairs of ribs. The soft area between the ribs and the hind leg is the **flank**, where you can watch a horse breathe. Altogether a horse has about 205 bones.

The legs surprise most people. What we call the horse's front **knee** is really built like our wrist, and the **hock** on the hind leg is like our ankle. Below each is the long **cannon bone**, then the **fetlock** joint, the sloping **pastern**, the **coronet band** (where the hoof grows from) and the **hoof**. In other words, a horse walks on the tip of one large toe on each leg, and the hoof is a tough covering, somewhat like a huge fingernail, around the last bone. Many horses also have small horny patches called **chestnuts** on the inside of the legs, and little nubs called **ergots** behind the fetlocks.

Why learn all this? Because good care depends on it. Judges and buyers study a horse's **conformation**: a well-sloped shoulder, a strong back, straight legs and pasterns at a healthy angle. A horse built in balance usually stays sound (free from lameness) longer and carries a rider more easily. The design is wonderful, too. A special "stay apparatus" of tendons and ligaments lets a horse lock its legs and doze standing up, ready to run in a moment. The more you learn the parts, the more you see how carefully the horse was made.

PICTURE STUDY



Whistlejacket, George Stubbs, c. 1762 · Oil on canvas · The National Gallery, London
Wikimedia Commons · Public domain

George Stubbs (1724–1806) was an English painter who wanted to paint horses exactly right. In the 1750s he spent about eighteen months in a lonely Lincolnshire farmhouse studying the bones and muscles of horses, layer by layer, and in 1766 he published his drawings as *The Anatomy of the Horse*. *Whistlejacket* shows a famous chestnut racehorse of Arabian descent, owned by the Marquess of Rockingham. The canvas is nearly 10 feet tall, so the horse is life-size, and Stubbs left out any background so that nothing distracts from the animal itself.

Look closely

- Find the poll, the crest and the withers. Can you trace the top line from ears to tail?
- Find a hock and a fetlock. How do the muscles and tendons show under the skin?
- Look at the eye. Is it on the front of the head or the side?

Talk about it

1. How did Stubbs's study of bones and muscles help him paint this horse?
2. Why might a painter leave out the background, the rider and even the saddle?

Safety first. Learn the parts from pictures and models first. If you study a real horse, do it with an experienced adult, approach at the shoulder from the near (left) side, and never stand directly behind the horse or crouch under its belly.

HANDS-ON: LABELLED PARTS-OF-THE-HORSE POSTER

Make a large, clearly labelled diagram that you will use for the rest of this trail. Later stops will send you back to it.

You will need

- A large sheet of poster board or two sheets of paper taped together
- Pencil, eraser, ruler and fine black marker
- Colored pencils in three colors
- A side-view picture of a horse to copy (a library book or the picture study)

Steps

1. Draw a horse in side view, facing left, filling most of the page. Sketch lightly first: an oval for the barrel, a smaller oval for the hindquarters, a wedge for the head, then the neck and legs.
2. Using a ruler, draw straight leader lines out from the horse to the margins. Label at least these 20 points: poll, forelock, muzzle, nostril, crest, withers, back, loin, croup, dock, barrel, flank, shoulder, chest, knee, cannon bone, fetlock, pastern, coronet band, hoof and hock.
3. Color-code your labels: one color for the head and neck, one for the body, one for the legs and feet.

4. In a corner, draw a small inset: a horse's front leg beside a human arm, with matching joints joined by dotted lines (horse knee to human wrist, fetlock to knuckle, hoof to fingertip).
5. In a second corner, draw a bird's-eye view of a horse's head with two shaded triangles showing the blind spots in front and behind.
6. Write a title across the top: "The Points of the Horse," with your name and the date.

Check your work

- My poster labels at least 20 points with straight leader lines.
- My labels are color-coded by head, body and legs.
- My inset compares a horse's leg with a human arm.
- I can point to every label without looking at the words.

FIELD NOTEBOOK

1. **Diagram:** In your Field Notebook, draw a small copy of one hind leg from stifle to hoof and label the stifle, hock, cannon bone, fetlock, pastern, coronet band and hoof.
2. **Notebook entry:** Write a paragraph (five to seven sentences) explaining which part of the horse surprised you most and why. Compare one horse joint with a joint in your own body, and tell how knowing the parts would help someone care for a horse.

Did you know? Because its eyes are set so far apart, a horse can see nearly all the way around itself, but it cannot see a carrot held right under its nose. It finds the carrot with its whiskers and lips. That is one reason horse people say: never sneak up on a horse from straight behind.

Map or diagram. Your parts poster is the master diagram for Trail B. Keep it handy: Stop B2 adds tack, Stop B4 zooms in on the hoof, and Stop B7 adds the blind spots and safe approach.

Goes deeper in. Life Science, "Mammals" and "Bones and Muscles," and Art, "Drawing Animals" (coming soon).

For families. Sources: United States Pony Clubs *Manual of Horsemanship*; Britannica, "Horse." Rib and bone counts vary a little between individual horses and breeds (many Arabians have 17 pairs of ribs), so the stop says "most" and "about 205." The picture: Stubbs, *Whistlejacket*, c. 1762, National Gallery, London (bought 1997). If you visit a barn, let the owner choose a calm horse and stay beside the student.

PRACTICE

1. **EASY** Which side of a horse is the near side?
2. **EASY** Where is the poll?

3. **MEDIUM** A horse's hock is built like which joint in your body? Its front knee is like which joint?
4. **MEDIUM** Why can't a horse see a carrot held directly under its nose?
5. **CHALLENGE** A vet's note says, "Swelling on the back of the off fore fetlock." Describe exactly where to look, step by step.

Make it a game • Points of the Horse Tag. One player is the "vet" and calls out a point of the horse, such as "Withers!" or "Off hock!" Everyone touches the matching spot on their own body (shoulders for withers, right ankle for off hock). The last to touch it, or anyone who touches the wrong place, becomes the next vet. For an extra challenge, play with labels on your poster turned face down.

Scripture. "Hast thou given the horse strength? hast thou clothed his neck with thunder?" (Job 39:19, KJV)

God asked Job whether he had made the horse's strength and its powerful neck. When we learn the crest, the withers and the hock, we are studying a design we did not make. Careful study should lead to wonder and to thanks to the Maker.

Practice: answers

1. The left side.
2. On the top of the head, just behind the ears.
3. The hock is like the human ankle; the front knee is like the human wrist.
4. Its eyes are on the sides of its head, which leaves a blind spot just in front of and below the nose. It finds the carrot by feel and smell with its whiskers and lips.
5. Off means the right side, and fore means the front leg, so go to the right front leg. Find the fetlock, the round joint just above the pastern and hoof, and look at the back of that joint (where the tuft of hair grows).

2.2 TACK: SADDLE, BRIDLE AND BIT

OBJECTIVES

- Name the main parts of a saddle and a bridle and tell what each does.
- Explain where the bit rests in a horse's mouth and how a snaffle differs from a curb.
- Describe how to check, clean and store tack so that it stays safe.

Warm-up. Look at a belt, a backpack or a pair of leather shoes. Where does it bend, rub and wear out first? Tack is made of leather and metal too, and a rider's safety depends on it holding together.

Video slot. Video coming. Parts of an English and a Western saddle and bridle; how to tack up a horse; how to clean leather tack. Search approved channels (Kentucky Horse Park, United States Pony Clubs, 4-H, a university extension horse program); preview first.

KEY TERMS

tack

All the equipment used on a horse for handling and riding, such as the saddle, bridle, halter and saddle pad.

bridle

The headgear used for riding, made of straps, a bit and reins, used to guide the horse.

bit

The metal (or rubber) bar that rests in the horse's mouth and is attached to the reins.

girth

The strap that goes under the horse's belly to hold an English saddle in place; on a Western saddle it is called a cinch.

stirrup

The loop or step hanging from each side of the saddle that holds the rider's foot.

CORE IDEAS

Tack, short for "tackle," is the gear a horse wears. The simplest piece is the **halter**, a set of straps around the head with a lead rope, used for leading and tying. For riding, a horse wears a **bridle** and a **saddle**. Every barn has a tack room, and a good horseman knows each strap by name, just as a carpenter knows each tool.

The saddle is built on a frame called the **tree**, traditionally made of wood, now often of synthetic materials. On top is the **seat**, with the raised **pommel** at the front and the **cantle** at the back. From each side hang the stirrup leathers and the **stirrups**. A pad or blanket goes underneath to cushion the horse's back and soak up sweat, and a **girth** (or cinch) holds

the whole thing on. A saddle must fit both horse and rider. A tree that is too narrow pinches the withers; one that is too wide presses down on them. Riders tighten the girth gently, in two or three stages, and check it again before mounting.

The bridle has a **crownpiece** over the poll, a **browband** across the forehead, two **cheekpieces** down the sides, a **noseband** and a **throatlatch** that keeps the bridle from slipping off over the ears. The cheekpieces hold the **bit**, and the reins attach to the bit. The bit rests on the **bars** of the mouth, a gap of bare gum between the front teeth and the back teeth. A **snaffle** bit acts directly: a gentle pull on one rein asks the horse to turn that way. A **curb** bit has shanks and a chain under the chin and works by leverage, so a little rein pressure becomes a stronger signal. Horsemen say a bit is only as harsh as the hands that hold it.

Tack has a long history. Riders once sat on bare backs or simple pads. Metal bits were in use in the ancient Near East more than 3,000 years ago. The stirrup came much later: it appeared in China by about the AD 300s and reached Europe a few hundred years after that. Stirrups gave riders a firm seat, so they could stand, turn and carry weapons or ropes without falling. Much of later horsemanship, from knights to cowboys, depended on that small loop of iron.

Tack is safety equipment, so it must be cared for. After each ride, wipe off sweat and dirt, clean the leather with saddle soap and a damp sponge, and condition it now and then so it does not crack. Wash the bit so it is clean for the horse's mouth. Check stitching on the reins, stirrup leathers and girth straps; a rotten stitch can break just when you need it. Store the saddle on a rack and hang the bridle neatly. A well-kept saddle can last for decades.

PICTURE STUDY



Prince Balthasar Charles on Horseback, Diego Velázquez, c. 1635 · Oil on canvas · Museo del Prado, Madrid
Wikimedia Commons · Public domain

Diego Velázquez (1599–1660) was court painter to King Philip IV of Spain. Here he painted the king's son and heir, Balthasar Charles, who was about six years old, riding a rearing pony. The painting was made to hang high above a doorway in a royal hall, which is why the pony's belly looks so round: it was meant to be seen from below. Look closely and you can see the bridle, bit and reins, and the boy's feet in the stirrups.

Look closely

- Find the reins. Trace them from the boy's hand to the bit. Do you see shanks on the bit?
- Find a stirrup and the boy's foot. How long are his stirrups?
- Find the saddle cloth. What colors and decorations did Velázquez paint on it?

Talk about it

1. Why would a prince be taught to ride so young?
2. Which kind of bit do you think the pony wears, a snaffle or a curb? What clues tell you?

Safety first. Tack up only with an experienced adult. Tie the horse with a quick-release knot or have someone hold it; never tie a horse by the bridle reins. Tighten the girth gradually, check it again before mounting, and never ride in tack with cracked leather or broken stitching.

HANDS-ON: TACKED-UP HORSE DIAGRAM AND LEATHER CARE

First draw a horse wearing a full English or Western saddle and bridle, with every part labelled. Then practice real leather care on something from home.

You will need

- Paper, pencil, ruler and fine marker
- Your parts-of-the-horse poster from Stop B1 (for reference)
- Glycerine saddle soap or a mild leather soap
- A small sponge, a soft cloth and an old leather belt, shoe or bag

Steps

1. Draw a horse in side view, about the size of your hand or larger. Add a saddle pad, a saddle and a bridle.
2. Draw leader lines and label the saddle: pommel, seat, cantle, flap (or fender, for Western), stirrup leather, stirrup, girth (or cinch) and saddle pad.
3. Label the bridle: crownpiece, browband, cheekpiece, noseband, throatlatch, bit and reins.
4. Below your drawing, sketch two bits side by side: a simple jointed snaffle with rings, and a curb with shanks and a chain. Label each.

5. Leather care: wipe the dust off the belt or shoe with a damp sponge. Rub the sponge on the saddle soap until it makes a little lather, and work it into the leather in small circles. Wipe it off with the cloth and let it dry away from heat.
6. Inspect the stitching on your item as a horseman would. Write down anything worn or loose.

Check your work

- My diagram labels at least eight saddle parts and seven bridle parts.
- I drew and labelled a snaffle and a curb bit.
- I cleaned a leather item and checked its stitching.

FIELD NOTEBOOK

1. **Diagram:** Draw the side of a horse's head and show where the bit rests on the bars, between the front teeth and the back teeth. Label incisors, bars, molars, bit and tongue.
2. **Notebook entry:** Write a paragraph explaining why tack is safety equipment. Include at least two things a rider should check before every ride and one reason why gentle hands matter more than a strong bit.

Did you know? A Western saddle can weigh 25 to 40 pounds or more, while many English saddles weigh about 10 to 20 pounds. The Western saddle's horn was made for cowboys to wrap (or "dally") a rope around when they roped cattle. The gap in the horse's mouth where the bit rests is a natural space of bare gum. (Some horses grow small canine or "wolf" teeth near it, which an equine dentist checks.)

Map or diagram. Add tack to your Stop B1 poster with a sheet of tracing paper laid over the top, so you can lift the saddle and bridle off and see the points underneath.

Goes deeper in. Gardening & Animals, "Caring for Animals," and History, "Knights and Castles" (for the stirrup and the mounted knight) (coming soon).

For families. Sources: United States Pony Clubs *Manual of Horsemanship*; Britannica, "Stirrup" and "Bit." Historians still debate exactly when and where the full stirrup first appeared; the stop uses "by about the AD 300s" for China and "a few hundred years after that" for Europe. Saddle weights are typical ranges. The picture: Velázquez, *Prince Balthasar Charles on Horseback*, c. 1635, Museo del Prado.

PRACTICE

1. **EASY** What is the difference between a halter and a bridle?
2. **EASY** Name the front and the back of a saddle's seat.
3. **MEDIUM** Where in the horse's mouth does the bit rest?
4. **MEDIUM** Why do riders tighten the girth in stages and check it again before mounting?

5. **CHALLENGE** James 3:3 says a small bit turns a horse's "whole body." A horse may weigh 1,000 pounds. How can a small piece of metal guide such a large animal?

Make it a game · Tack Room Relay. Write each tack part on a slip of paper (pommel, cantle, girth, stirrup, crownpiece, browband, noseband, throatlatch, bit, reins and so on). Spread them face down across the room. Players race, one at a time, to pick a slip and place it on the right spot of a large horse drawing. A wrong spot means the next player may move it and score instead.

Scripture. "Behold, we put bits in the horses' mouths, that they may obey us; and we turn about their whole body." (James 3:3, KJV)

James uses the bit to teach about the tongue: a small thing that steers a great deal. A horseman with gentle, steady hands guides a powerful horse; a person who controls his words can steer his whole life well.

Practice: answers

1. A halter is used for leading and tying a horse; a bridle, with a bit and reins, is used for riding.
2. The pommel is the front; the cantle is the back.
3. On the bars, the gap of bare gum between the front teeth (incisors) and the back teeth (molars).
4. Tightening all at once can pinch or upset the horse, and many horses swell their bellies or relax after a few minutes, so a girth that felt tight may be loose. A loose girth lets the saddle slip, which can cause a fall.
5. Not by force: the bit gives a light signal through the reins, and a horse that has been patiently trained has learned to yield to that signal. Training, trust and gentle hands do the work. James uses this picture to show how a small thing, the tongue, can steer a whole life.

2.3 GROOMING, STEP BY STEP

OBJECTIVES

- Name the tools in a grooming kit and the order in which they are used.
- Explain three reasons for grooming a horse every day.
- Describe how to stand and work safely while grooming.

Warm-up. Think about how you get ready in the morning: wash, brush your hair, check for scrapes. Now picture doing the same for an animal that weighs 1,000 pounds and rolls in the mud for fun. Where would you start?

Video slot. Video coming. How to groom a horse step by step: curry comb, dandy brush, body brush, mane and tail, picking hooves. Search approved channels (Kentucky Horse Park, United States Pony Clubs, 4-H, a university extension horse program); preview first.

KEY TERMS

curry comb

A rubber or plastic comb with short teeth, rubbed in small circles to loosen dirt, mud and dead hair.

dandy brush

A stiff brush used with short, flicking strokes to sweep away the dirt the curry comb brought up.

body brush

A soft, short-bristled brush used to clean and polish the coat, face and legs.

hoof pick

A small hooked tool used to clean mud and stones from the underside of the hoof.

quick-release knot

A knot for tying a horse that holds firmly but comes undone with one pull on the loose end.

CORE IDEAS

Grooming is far more than making a horse look nice. Brushing removes the dirt and sweat that would rub under a saddle and cause sores. It spreads the natural oils that keep the coat healthy and waterproof. Most of all, it lets you check every inch of the horse each day for cuts, swellings, heat, ticks or tender spots. Grooming also builds trust. In a field, horses groom each other by nibbling along the neck and withers, and a horse that is groomed kindly learns to stand quietly for its handler.

Step 1: tie safely. Put on the halter and tie the lead rope to something solid, at about the height of the horse's withers or higher, with a **quick-release knot**, or use cross-ties, or have

a helper hold the horse. Keep your tools in a bucket or tote out of the way so neither you nor the horse trips on them.

Step 2: curry. Rub the **curry comb** firmly in small circles over the fleshy parts: neck, shoulders, back, barrel and hindquarters. This loosens mud and dead hair. Do not curry the bony legs or the face, where there is little padding. **Step 3: dandy brush.** With short, flicking strokes in the direction the hair grows, sweep the loosened dirt off and away. **Step 4: body brush.** Use the soft brush on the face, legs and whole coat to polish. Every few strokes, draw the brush across the curry comb to clean it.

Step 5: mane and tail. Separate tangles with your fingers, then comb or brush from the bottom upward, a section at a time, so you do not pull out hairs. Tail hair grows slowly, and a pulled hair takes many months to grow back. When you work on the tail, stand to one side of the hindquarters, not directly behind. **Step 6: face.** Use a soft brush and a damp sponge to wipe the eyes and nostrils gently, with a separate sponge for under the tail.

Step 7: hooves. Stand beside the leg, facing the tail, run your hand down the back of the leg and ask the horse to lift its foot. Use the **hoof pick** from heel toward toe, working along the grooves beside the V-shaped frog, not into it. Look for stones, nails, a loose shoe or a bad smell. Many horsemen pick hooves before and after every ride. Grooming before riding takes about 15 to 30 minutes; after riding, sponge off sweat, let the horse cool down and check the saddle and girth areas for rubs. A horse groomed with care is healthier, calmer and safer to ride.

PICTURE STUDY



Hambletonian, Rubbing Down, George Stubbs, 1799–1800 · Oil on canvas · Mount Stewart, County Down, Northern Ireland (National Trust)
Wikimedia Commons · Public domain

In 1799 the racehorse Hambletonian won a famous, hard-fought race at Newmarket, England. Soon after, his owner asked George Stubbs, then about 75 years old, to paint him. Stubbs did not show the horse winning. He showed what came after: a stable lad rubbing him down while the trainer holds him. The horse looks tired and tense, with veins standing out on his skin. The canvas is about 12 feet wide, one of Stubbs's largest.

Look closely

- Find the stable lad's cloth. Which part of the horse is he rubbing?
- Look at the horse's skin. Where can you see veins and muscles?
- Find the horse's ears and eye. Does he look relaxed or upset?

Talk about it

1. Why do you think Stubbs painted the care after the race instead of the race itself?
2. What does a horse need right after hard work? Use the painting and the story to answer.

Safety first. Groom a real horse only with an experienced adult nearby. Tie with a quick-release knot or have a helper hold the horse, wear sturdy boots, keep tools out from underfoot, never kneel or sit on the ground beside a horse, and never stand directly behind it.

HANDS-ON: GROOMING-KIT CHECKLIST AND GROOMING MAP

Build a checklist for a grooming kit and a diagram that shows which tool goes where and in which direction. If you do not have a horse, practice the steps on a large stuffed animal, or (with permission) on a calm family dog using a soft brush.

You will need

- A sheet of paper or card for the checklist
- Paper and colored pencils for the grooming map
- A shoebox or small bucket (optional, to make a pretend kit)
- Real or pretend tools: a rubber curry, two brushes, a comb and a hoof pick (pictures cut from a catalog are fine)

Steps

1. Make the checklist: list each tool (curry comb, dandy brush, body brush, mane and tail comb, hoof pick, two sponges, a towel, fly spray), with a box to tick and one line on what each does.
2. Draw a horse in side view for the grooming map. Shade the areas where you may use the curry comb in one color (neck, shoulder, back, barrel, hindquarters). Leave the face and lower legs unshaded.
3. Draw small spiral arrows on the shaded areas for the curry's circles, and straight arrows along the coat showing the direction of hair growth for the brushes.

4. Number the steps 1 to 7 in the margin (tie, curry, dandy brush, body brush, mane and tail, face, hooves).
5. Draw a hoof seen from underneath with an arrow from heel to toe for the hoof pick, and mark the frog “do not dig here.”
6. Gather the kit in a shoebox or bucket. Practice the seven steps in order on a stuffed animal or a calm dog.

Check your work

- My checklist names at least eight items and what each is for.
- My grooming map shows where to curry and which way to brush.
- I can say the seven steps in order.

FIELD NOTEBOOK

1. **Diagram:** Copy your seven grooming steps into the Field Notebook as a flow chart, one box per step with an arrow to the next, and a tiny drawing of the tool in each box.
2. **Notebook entry:** Write a paragraph about why a horse owner should groom every day even if the horse is not ridden. Give at least three reasons and tell which one you think matters most.

Did you know? Horses love to roll, especially after a bath or a ride. Rolling scratches itchy spots and coats the hair with dust that may help protect against flies. A horse may shake like a dog afterward. Horses also have favorite itchy spots, often at the withers, and some will nibble the air or your sleeve when you find one.

Map or diagram. Your grooming map can sit beside your parts poster from Stop B1. Use the same point names: say “curry the barrel and croup,” not “curry the middle and the back.”

Goes deeper in. Gardening & Animals, “Caring for Animals,” and Life Science, “Skin, Hair and Hooves” (coming soon).

For families. Sources: United States Pony Clubs *Manual of Horsemanship*; 4-H horse project materials. Barns differ on whether to pick hooves first or last; both are fine as long as it is done before and after riding. The picture: Stubbs, *Hambletonian, Rubbing Down*, 1799–1800, Mount Stewart (National Trust); Hambletonian won at Newmarket in March 1799. The painting honestly shows a horse strained by a hard race, a good opening to talk about care after work.

PRACTICE

1. **EASY** Which tool is used first on the body, and how do you move it?
2. **EASY** Which way do you brush with the dandy brush?
3. **MEDIUM** Why should you not use a curry comb on the lower legs or face?

4. **MEDIUM** Name three things you are checking for while you groom.
5. **CHALLENGE** Give two reasons to brush a tail from the bottom up, standing to one side, instead of raking it from the top while standing behind the horse.

Make it a game · Groom in Order. Write the seven grooming steps on separate cards and shuffle them. Set a timer for 30 seconds: can you lay them in the right order? Then a partner swaps two cards while you close your eyes. Find the swap and say why the order matters.

Scripture. “Be thou diligent to know the state of thy flocks, and look well to thy herds.” (Proverbs 27:23, KJV)

A diligent shepherd or horseman knows his animals by daily, close attention. Grooming is that verse in action: looking well at the horse, every day, so that small troubles are found before they become large.

Practice: answers

1. The curry comb, rubbed firmly in small circles.
2. In short, flicking strokes in the direction the hair grows.
3. Those areas are bony with little padding, so the hard curry would be uncomfortable or could hurt the horse. Use a soft brush there instead.
4. Any three: cuts or scrapes, swelling, heat, ticks, tender or sore spots, saddle or girth rubs, stones in the hooves, a loose shoe, a bad smell in the hoof.
5. Starting at the bottom works out tangles a little at a time, so you do not pull out tail hairs, which grow back very slowly. Standing to one side keeps you out of the danger zone directly behind the horse, where a startled horse could kick.

2.4 HOOVES AND THE FARRIER: “NO HOOF, NO HORSE”

OBJECTIVES

- Label the wall, sole, frog and white line of a hoof and tell what each does.
- Describe what a farrier does and how often a horse needs one.
- Calculate how long a hoof takes to grow out from coronet band to ground.

Warm-up. Press on one of your fingernails, then on the skin beside it. Which can feel more? Your nail is made of keratin, the same tough material as a horse’s hoof wall. Keep that in mind when you read about nails being driven into a hoof.

Video slot. Video coming. A farrier trimming and shoeing a horse; parts of the hoof (wall, sole, frog, white line). Search approved channels (Kentucky Horse Park, American Farrier’s Association, 4-H, a university extension horse program); preview first.

KEY TERMS

farrier

A skilled craftsman who trims horses’ hooves and makes and fits horseshoes. The word comes from the Latin *ferrum*, “iron.”

hoof wall

The hard outer shell of the hoof, made of keratin, which bears much of the horse’s weight and has no nerves in its outer part.

sole

The slightly hollow underside of the hoof, inside the wall.

frog

The rubbery, V-shaped pad on the underside of the hoof that absorbs shock, gives grip and helps pump blood back up the leg.

white line

The pale seam where the hoof wall joins the sole. A farrier’s nails must go outside it, into the insensitive wall.

CORE IDEAS

Horsemen have long said, “No hoof, no horse,” or “No foot, no horse.” In the 1750s an English writer on horses, Jeremiah Bridges, used *No Foot, No Horse* as the title of a book on the anatomy of the foot. The saying is simple: a horse of 1,000 pounds or more stands on four feet, each not much bigger than a saucer. If a foot is sore or broken, the horse is lame, and a lame horse cannot work, carry a rider or even graze comfortably.

Look at a hoof from the side and you see the **hoof wall**, made of keratin like your fingernails. It grows down from the **coronet band** at the top, about a quarter to three-eighths of an inch

each month, so a whole new wall takes roughly nine months to a year to grow from top to ground. Turn the hoof over and you see the slightly hollow **sole**, the V-shaped **frog** and the pale **white line** where wall and sole meet. Inside the hoof, protected like a jewel in a box, is the coffin bone, the last bone of the leg. Each time the foot lands, the frog and the hoof spread a little, which absorbs shock and helps squeeze blood back up the leg toward the heart.

Wild horses wear their hooves down by traveling many miles a day over rough, dry ground. Horses kept on soft pasture, or ridden on roads, need help. A **farrier** visits about every six to eight weeks. Some horses go “barefoot” and only need trimming with nippers and a rasp. Others wear shoes for grip, for protection on hard ground or to support a weak foot. In hot shoeing, the farrier heats a steel shoe in a forge, shapes it on the anvil and touches it briefly to the hoof to check the fit; it smokes and smells, but it does not hurt, because the wall has no nerves there. Then he drives nails at an angle through the wall, outside the white line, so the points come out the side. He twists off the points, bends the ends over (called “clinches”) and rasps them smooth.

The horseshoe has a long history. Roman travelers sometimes strapped iron “hipposandals” onto horses’ feet, and nailed iron shoes were common in Europe by roughly a thousand years ago. For centuries the blacksmith’s forge was one of the busiest places in every town, until cars and tractors took over most horses’ work in the 1900s. Today farriers still train for years, and many earn certification through farriers’ associations.

Between farrier visits, the owner’s job is daily care. Pick the hooves every day and before and after riding. Look for stones, cracks, a loose or twisted shoe, heat in the hoof, or a black, foul-smelling frog, a sign of an infection called **thrush**. Keep stalls clean and dry. Watch too for sudden lameness and a hot, painful front foot; it can be **laminitis**, a serious illness often linked to too much rich grass or grain, and it needs a veterinarian at once.

PICTURE STUDY



Shoeing, Sir Edwin Landseer, 1844 · Oil on canvas · Tate, London
Wikimedia Commons · Public domain

Sir Edwin Landseer (1802–1873) was one of the most popular painters in Victorian Britain, famous for his animals. He also modeled the four great bronze lions at the foot of Nelson’s Column in Trafalgar Square. In *Shoeing* he painted a bay mare standing patiently in a village smithy while the smith works on her foot, with a donkey and a bloodhound for company. Notice how calm the mare is: a good farrier and a well-trained horse work together.

Look closely

- Find the hoof the smith is holding. Which leg is it, fore or hind?
- Find the smith’s tools, the anvil and any horseshoes hanging on the wall.
- Find the other two animals. What are they doing?

Talk about it

1. How did Landseer show that the mare trusts the smith?
2. Why do you think the smithy was such an important place in a village in 1844?

Safety first. Pick up a horse’s foot only with an experienced adult showing you how: stand beside the leg facing the tail, never kneel or sit, and keep your head out of the way. During shoeing, stand well back from the forge, hot shoes and dropped nails, and let the farrier direct where the horse is held.

HANDS-ON: HOOF DIAGRAM AND HOOF-GROWTH CALCULATION

Draw two views of a hoof with labels, then use arithmetic to work out how a hoof grows.

You will need

- Paper, pencil, ruler and colored pencils
- A real horseshoe or a picture of one (many farm stores and farriers will give away a used shoe)
- A calculator (optional)

Steps

1. Underside (solar) view: draw a rounded hoof about 4 inches across. Inside the outer edge draw a thin pale band for the white line, then shade the sole. Add the V-shaped frog pointing toward the toe. Label: toe, heel, wall, white line, sole, frog, bars.
2. Side cutaway view: draw the lower leg in outline and, inside it, the pastern bones and the coffin bone sitting inside the hoof. Label: pastern, coronet band, hoof wall, coffin bone, sole, frog.
3. On the underside view, draw a horseshoe in dotted lines and mark seven or eight nail holes, all outside the white line.
4. Calculate: the hoof wall at the toe is $3\frac{1}{2}$ inches tall and grows $\frac{3}{8}$ inch per month. How many months does it take to grow out completely? Show your work.
5. Calculate: a farrier comes every 7 weeks. About how many visits is that in a year? (Use 52 weeks.)
6. Write both answers neatly beside your diagram.

Check your work

- My underside view labels at least six parts and shows nails outside the white line.
- My cutaway shows the coffin bone inside the hoof.
- I worked out the growth time (about $9\frac{1}{3}$ months) and the visits per year (about 7).

FIELD NOTEBOOK

1. **Diagram:** Paste or copy your two hoof views into the Field Notebook under the heading “No Hoof, No Horse.”
2. **Notebook entry:** Write a paragraph explaining the saying “No hoof, no horse” to someone who has never been near a horse. Use at least three key terms from this stop and tell what the owner and the farrier each do to keep the feet sound.

Did you know? Hooves grow faster in warm, wet months than in winter, and young horses’ hooves grow faster than old horses’. Horseshoes come in many sizes: a pony shoe may fit in your palm, while a big draft horse’s shoe can be as wide as a dinner plate. Some racehorses wear light aluminum shoes instead of steel.

Map or diagram. Go back to your Stop B1 poster and draw a circle around the hoof with a line to a small box that says “See hoof diagram, Stop B4.”

Goes deeper in. Life Science, “Bones and Muscles,” Arithmetic, “Fractions in Measurement,” and History, “Village Life and Trades” (coming soon).

For families. Sources: American Farrier’s Association; United States Pony Clubs *Manual of Horsemanship*; Britannica, “Horseshoe.” Hoof growth rates vary (about $\frac{1}{4}$ to $\frac{3}{8}$ inch per month is typical). Jeremiah Bridges’ *No Foot, No Horse* appeared in the early 1750s; the saying itself is probably older, so the stop does not claim he invented it. The early history of the nailed horseshoe is uncertain, so the stop says “by roughly a thousand years ago.” The picture: Landseer, *Shoeing*, 1844, Tate.

PRACTICE

1. **EASY** What does a farrier do, and what Latin word does the name come from?
2. **EASY** Which part of the hoof is a rubbery, V-shaped shock absorber?
3. **MEDIUM** Why does nailing on a shoe not hurt the horse, if it is done correctly?
4. **MEDIUM** Name two signs of trouble you might find when picking out a hoof.
5. **CHALLENGE** A hoof wall is $3\frac{1}{2}$ inches tall at the toe and grows $\frac{3}{8}$ inch per month. How long until a crack at the coronet band grows all the way down and out? Show your work.

Make it a game • Farrier’s Forge (Sound Game). One player is the farrier and taps a rhythm on a table with a spoon “hammer”: one tap for “trim,” two for “shape the shoe,” three for “nail it on.” The others act it out. Then switch: the farrier calls out a hoof part (frog, sole, wall, white line) and everyone points to it on their hoof diagrams. Last to point becomes the next farrier.

Scripture. “Whose arrows are sharp, and all their bows bent, their horses' hoofs shall be counted like flint, and their wheels like a whirlwind:” (Isaiah 5:28, KJV)

Isaiah describes a strong army coming in judgment, and part of its strength is horses with hoofs hard as flint. In Bible times there were no horseshoes, so a horse’s own hard, sound feet were precious. A sound hoof is one of the gifts a good horseman guards.

Practice: answers

1. A farrier trims hooves and makes and fits horseshoes. The name comes from *ferrum*, Latin for “iron.”
2. The frog.
3. The nails go into the outer hoof wall, outside the white line, where there are no nerves, just as cutting your fingernail does not hurt.
4. Any two: a stone or nail stuck in the foot, a crack, a loose or twisted shoe, heat in the hoof, a black, foul-smelling frog (thrush), tenderness or lameness.
5. $3\frac{1}{2} \div \frac{3}{8} = 7\frac{1}{2} \times \frac{8}{3} = 56/6 = 9\frac{1}{3}$ months, a little over nine months.

2.5 FEEDING: HAY, GRAIN AND WATER

OBJECTIVES

- Explain why a horse's digestive system needs "little and often" and "forage first."
- Calculate a horse's daily hay and water needs from its weight.
- Cost out a month of feed and care for one horse.

Warm-up. Guess: how much does a horse eat in one day? Write your guess in pounds. Then guess how many gallons of water it drinks. Check your guesses as you read.

Video slot. Video coming. How to feed a horse: hay, grain, water and the horse digestive system. Search approved channels (Kentucky Horse Park, United States Pony Clubs, 4-H, a university extension horse program); preview first.

KEY TERMS

forage

Grass, hay and other plant fiber; the main and most important part of a horse's diet.

concentrate

A rich feed such as oats, corn, barley or prepared pellets, given in small amounts to horses that need extra energy.

cecum

A large pouch at the start of the horse's hindgut where helpful microbes break down tough plant fiber (say "SEE-kum").

colic

Belly pain in a horse. It has many causes, can be serious and always calls for watching closely and often calling a vet.

ration

The measured amount and kind of food given to an animal each day.

CORE IDEAS

God made the horse a **grazer**. A horse on open grass will eat for up to sixteen hours a day, a few mouthfuls at a time, walking slowly as it goes. Its stomach is small for its size, holding only about 2 to 4 gallons, and a horse cannot vomit. So big, sudden meals are dangerous. Good feeding copies grazing: **little and often**, with plenty of fiber moving steadily through.

The first rule is **forage first**. Grass and hay should make up most of the diet. A common rule of thumb is that a horse eats about 2 percent of its body weight in food each day, and at least 1 to 1.5 percent should be forage. A 1,000-pound horse, then, needs roughly 20 pounds of food a day, mostly hay. Grass hays such as timothy and orchard grass suit most horses;

legume hays such as alfalfa are richer. Good hay smells sweet and is green and leafy. Moldy or dusty hay can make a horse very sick, so it should never be fed.

Fiber is digested mostly in the hindgut. After the stomach and the long small intestine comes the **cecum**, a large pouch where billions of microbes break down tough plant fiber, much as in a compost heap. Those microbes are used to a certain diet. If the feed changes suddenly, they can be upset, and the horse may get **colic**. So any change of hay or feed should be made slowly, over a week or ten days. Signs of colic include pawing, looking at the belly, rolling again and again, sweating and not eating. A horse with these signs needs a veterinarian.

Concentrates such as oats, corn, barley or pellets are for horses that need extra: hard-working horses, growing youngsters, nursing mares and some older horses. Many pleasure horses need little or none. Grain is weighed, not scooped by guess, because too much can cause colic or laminitis, the hoof illness from Stop B4. Every horse also needs a salt block. Treats such as carrot or apple pieces are fine in small amounts, fed from a flat palm. Never give lawn clippings, which ferment quickly. A horse's teeth keep slowly erupting and wearing for most of its life, so an equine dentist usually checks and files (or "floats") them about once a year.

Water matters most of all. A 1,000-pound horse resting in cool weather drinks about 5 to 10 gallons a day; in heat or hard work it may need 15 to 20 or more. Water must be clean, and in winter it must not freeze over, because horses drink less when water is icy, which can lead to colic. Owners judge whether the ration is right by **body condition**: you should be able to feel the ribs easily but not see them. All of this costs money every day, which is why caring for a horse is a serious promise.

PICTURE STUDY



Mares and Foals in a River Landscape, George Stubbs, c. 1763–1768 · Oil on canvas · Tate, London
Wikimedia Commons · Public domain

George Stubbs painted several pictures of mares and their foals for wealthy owners of racing and breeding farms. He arranged the horses in a calm row like a frieze, the way figures are carved along an old temple wall. Here they stand on good grass beside a river: food and water, side by side, which is exactly what a horse needs most.

Look closely

- Count the mares and the foals. How can you tell which is which?
- Find the grass and the water. How much of the picture do they take up?
- Find a horse with its head down. What is it doing?

Talk about it

1. Why is a grassy field beside clean water a good home for horses?
2. How does Stubbs make the group look peaceful and safe?

Safety first. Feed only with an adult's permission. Never walk into a field or stall carrying a feed bucket among loose horses, which may push or kick at feeding time. Offer treats from a flat, open palm with fingers together, and store grain where horses cannot break in, since overeating grain can kill a horse.

HANDS-ON: A DAILY CARE CHART, COSTED OUT

Find out what a horse really costs. Build a care chart for one 1,000-pound horse and add up a month of expenses. Use local prices if you can (call a feed store, or ask a horse owner);

otherwise use the sample prices below and say so on your chart.

You will need

- Paper or a spreadsheet, ruler and pencil
- A calculator
- Sample prices (if you cannot find local ones): hay \$12.50 per 50-pound bale; pelleted feed \$20 per 50-pound bag; salt block \$10, lasting 2 months; farrier trim \$60 every 7 weeks; vet and dentist \$600 a year

Steps

1. Make a daily chart with columns for Morning, Midday and Evening and rows for Hay, Concentrate, Water check, Hoof check and Notes. Fill in a sensible plan, for example 7 pounds of hay three times a day and 2 pounds of pellets once a day.
2. Hay: work out the pounds per day (2 percent of 1,000 pounds = 20 pounds). Multiply by 30 days. Divide by 50 to get bales per month and round up. Multiply by the price per bale.
3. Concentrate: pounds per day times 30, divided by 50 pounds per bag, rounded up, times the price per bag.
4. Farrier: a visit every 7 weeks is about $52 \div 7 \approx 7.4$ visits a year. Multiply by the price and divide by 12 for a monthly cost. Do the same for vet and dentist.
5. Add a salt block cost per month (price $\div$ months it lasts). Total everything for one month, and multiply by 12 for a year.
6. Diagram: on the back, draw the horse's digestive tract as a long winding tube and label mouth, esophagus, stomach, small intestine, cecum, large colon, small colon. Write each part's job in a few words.

Check your work

- My daily chart spreads feed over at least three meals.
- My costs show the math for hay, concentrate, farrier, vet and salt, and a monthly and yearly total.
- My digestive diagram labels at least six parts, including the stomach and cecum.

FIELD NOTEBOOK

1. **Diagram:** Copy your digestive tract drawing into the Field Notebook. Draw a small 2-to-4-gallon bucket beside the stomach to show its size.
2. **Notebook entry:** Write a paragraph telling what you learned about the true cost of a horse. Was it more or less than you guessed? Use Proverbs 12:10 to explain why a horse owner must plan ahead before buying.

Did you know? With the sample prices, hay alone for a 1,000-pound horse is about 600 pounds a month: 12 bales, or \$150. A horse's whole digestive tract, from mouth to tail, is

about 100 feet long. Water is heavy too: 10 gallons weighs about 83 pounds, so carrying water by bucket for even one horse is real work.

Map or diagram. Put your digestive diagram beside your Stop B1 parts poster. Draw a light outline of the barrel and show where the stomach and cecum sit inside it: the stomach toward the front, behind the diaphragm, and the cecum on the right side toward the flank.

Goes deeper in. Life Science, “Digestion,” Arithmetic, “Percent and Money,” and Small Business & Economics, “Budgets and Costs” (coming soon).

For families. Sources: National Research Council, *Nutrient Requirements of Horses* (2007), as summarized by university extension programs; United States Pony Clubs *Manual of Horsemanship*. Amounts are rules of thumb for an average adult horse; real rations depend on the horse, the work and the hay, and should be set with a vet. Sample prices are only for practice and vary widely by region and year. Feed treats only with the owner’s permission; some horses have health conditions that rule out sugary foods.

PRACTICE

1. **EASY** What should make up most of a horse’s diet?
2. **EASY** Why should a horse be fed little and often instead of one big meal?
3. **MEDIUM** Why must a change of hay or feed be made slowly, over a week or more?
4. **MEDIUM** A horse weighs 1,100 pounds and eats 2 percent of its weight each day. How many pounds is that per day? How many 50-pound bales in 30 days?
5. **CHALLENGE** It is January. A horse’s water trough has a thick layer of ice and its hay is barely touched. What might be wrong, and what should the owner do?

Make it a game • Feed Store Shopkeeper. One player runs a pretend feed store with price tags (hay, pellets, salt block, carrots). The others have a pretend budget of \$250 for one horse for one month. They must buy enough hay first (20 pounds a day for 30 days), then decide what else fits. Anyone who buys grain or treats before the hay is covered loses a turn.

Scripture. “A righteous man regardeth the life of his beast: but the tender mercies of the wicked are cruel.” (Proverbs 12:10, KJV)

To “regard” the life of an animal is to pay attention to what it needs. A righteous owner plans the hay, the water and the vet bills, and does not let a horse go hungry or thirsty. Careful feeding is a daily way to obey this proverb.

Practice: answers

1. Forage: grass and hay.

2. Its stomach is small (about 2 to 4 gallons) and it cannot vomit, so big meals can cause colic. Little and often copies natural grazing.
3. The microbes in the cecum that digest fiber are used to the old diet. A sudden change upsets them and can cause colic.
4. 22 pounds a day. $22 \times 30 = 660$ pounds; $660 \div 50 = 13.2$, so 14 bales (round up).
5. The horse may not be drinking enough because the water is frozen or icy, and a horse that drinks too little is at risk of impaction colic; poor appetite can be an early sign. The owner should break the ice or provide unfrozen (ideally slightly warmed) water at once, watch for colic signs such as pawing, rolling or looking at the belly, and call the vet if the horse still will not eat or drink.

2.6 WALK, TROT, CANTER AND GALLOP

OBJECTIVES

- Count the beats and name the footfall order of the walk, trot, canter and gallop.
- Give the approximate speed of each gait.
- Tell how Eadweard Muybridge's photographs of 1878 settled an old question about the gallop.

Warm-up. Tap a table with your fingers: tap-tap-tap-tap evenly. Then tap two at a time: TAP-TAP. Then tap a rolling three: ta-ta-TUM. You have just played the rhythms of three horse gaits. Can you guess which is which?

Video slot. Video coming. Horse gaits in slow motion: walk, trot, canter, gallop and footfall patterns; Muybridge's *The Horse in Motion* animated. Search approved channels (Kentucky Horse Park, Library of Congress, United States Pony Clubs, a university extension horse program); preview first.

KEY TERMS

gait

A pattern in which a horse moves its feet, such as the walk, trot, canter or gallop.

beat

One footfall, or two feet landing together, heard as one sound in the rhythm of a gait.

diagonal pair

A front leg and the opposite hind leg (such as left fore and right hind) that move together in the trot.

lead

In the canter and gallop, the front leg that reaches farthest forward; a horse circling left should be on the left lead.

suspension

The moment in the trot, canter and gallop when all four feet are off the ground.

CORE IDEAS

A **gait** is the pattern of a horse's feet. Riders learn to feel gaits through the seat and to hear them on hard ground by counting **beats**. Most horses have four natural gaits, from slowest to fastest: walk, trot, canter and gallop. Each has its own rhythm, speed and use.

The **walk** has four even beats: left hind, left fore, right hind, right fore. Two or three feet are always on the ground, so it is smooth and steady. The head nods with each step. A horse walks at about 4 miles an hour, a brisk human pace, and can keep it up for hours. The **trot** has two beats: the legs move in **diagonal pairs**, left fore with right hind, then right fore with

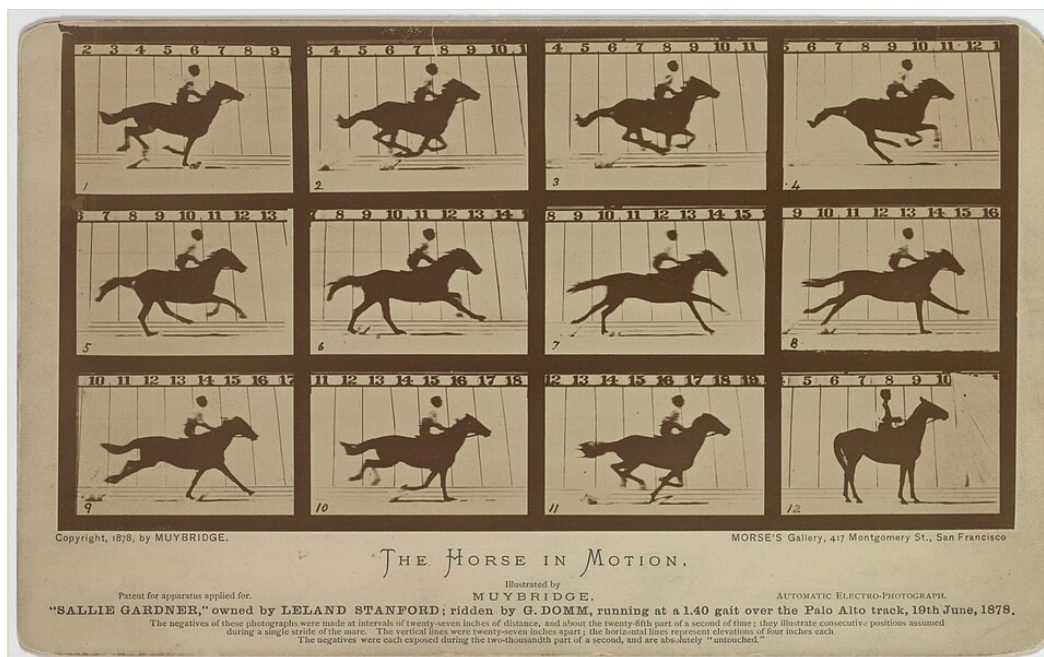
left hind, with a moment of **suspension** between. It runs about 8 to 10 miles an hour and can be bouncy. English riders “post,” rising and sitting in time with one diagonal pair; Western riders ask for a slow, smooth trot called a **jog** and sit it.

The **canter** is a rolling three-beat gait, about 10 to 17 miles an hour. On the left lead the order is right hind; then left hind and right fore together; then left fore, the **lead** leg, reaching farthest forward; then suspension. A horse circling left keeps its balance best on the left lead. Western riders call a slow canter a **lope**. The **gallop** is the fastest gait. The two legs that land together in the canter split apart, so it becomes four beats. Most horses gallop at 25 to 30 miles an hour, and racing Thoroughbreds can reach about 40 for short stretches.

For centuries people argued about one question: in the trot or gallop, are all four feet ever off the ground at once? Painters often showed galloping horses with front legs stretched forward and hind legs back, like a rocking horse. In June 1878, at Leland Stanford’s farm in Palo Alto, California, the photographer **Eadweard Muybridge** set up a row of 12 cameras along a track. Threads across the track tripped each shutter as a mare named Sallie Gardner galloped past. The pictures, taken in a fraction of a second each, proved that all four feet do leave the ground, but they are bunched under the belly, not stretched out. Artists had been drawing it wrong for hundreds of years.

Some breeds have extra gaits. The Tennessee Walking Horse has a smooth “running walk,” and the Icelandic horse a quick, even four-beat gait called the **tölt**. Many Standardbred harness racers **pace**, moving both legs on the same side together. A good rider asks for each gait at the right time: walk to warm up and cool down, trot to build fitness, canter in balance, and gallop only on safe, open ground with a fit horse.

PICTURE STUDY



The Horse in Motion ("Sallie Gardner" at a gallop), Eadweard Muybridge, 1878 · Photographs printed on a card (albumen prints) · Library of Congress, Washington, D.C. (and other collections)
Wikimedia Commons · Public domain

Eadweard Muybridge (1830–1904) was an English-born photographer working in California. Leland Stanford, a railroad builder and former governor of California who bred and raced horses, wanted to know how a horse's legs really move. Muybridge's card of twelve pictures, published in 1878, was one of the first times anyone had frozen fast motion on film. Flip through the frames quickly and the horse seems to run, an early step toward motion pictures.

Look closely

- Find the frame (or frames) where all four feet are off the ground. Where are the legs?
- Find a frame where only one foot touches the ground.
- Follow one leg, such as the left front, from frame to frame. What does it do?

Talk about it

1. Why could no one settle the argument about the gallop before cameras were fast enough?
2. How might these photographs have changed the way artists painted horses afterward?

Safety first. Learn new gaits only with a qualified instructor, on a well-schooled horse, in an enclosed arena, and always in a properly fitted, certified riding helmet. Build up slowly: be secure at the walk before trotting, and at the trot before cantering. Gallop only with permission, on safe ground.

HANDS-ON: FOOTFALL CHART OF THE FOUR GAITS

Make a chart that shows, beat by beat, which feet are on the ground in each gait. This is the same kind of chart scientists and coaches still use to study movement.

You will need

- Graph paper or plain paper and a ruler
- Four colored pencils, one for each leg
- A partner (for the acting part)

Steps

1. Draw four tables, one for each gait. Each table has four rows labelled LF (left fore), RF (right fore), LH (left hind), RH (right hind), and eight columns for moments in time.
2. Walk: shade boxes to show each foot on the ground in the order LH, LF, RH, RF. Check that two or three feet are always shaded in every column.
3. Trot: shade LF and RH together, then a blank column (suspension), then RF and LH together, then another blank.
4. Canter (left lead): shade RH; then LH and RF together; then LF; then a blank column for suspension.
5. Gallop: shade one foot at a time in the order RH, LH, RF, LF, then a blank column for suspension.
6. Under each table, write the number of beats and the usual speed. Then act out each gait with a partner: one person is the front legs and one the back legs, holding a broom handle between you as the “body.”

Check your work

- My four charts show the right number of beats and the suspension in the trot, canter and gallop.
- I wrote the beats and speed under each gait.
- I can clap the rhythm of each gait from memory.

FIELD NOTEBOOK

1. **Diagram:** Draw two galloping horses side by side: on the left, the old “rocking-horse” way painters drew it, with legs stretched out; on the right, the way Muybridge’s camera showed it, with legs tucked under. Label each.
2. **Notebook entry:** Write a paragraph explaining how Muybridge settled the question of the gallop. Tell what people believed before, how the experiment worked and what it proved.

Did you know? A galloping horse breathes in time with its stride: one breath for each stride. Some racehorses take strides of over 20 feet at full speed. Muybridge later

photographed people, birds, dogs and even an elephant, and published thousands of motion pictures in *Animal Locomotion* (1887).

Map or diagram. On a map of California, find Palo Alto, south of San Francisco. Stanford's horse farm there later became the site of Stanford University, founded in memory of his son.

Goes deeper in. Life Science, "Bones and Muscles," Art, "How Artists Show Motion," and History, "Inventions of the 1800s" (coming soon).

For families. Sources: Library of Congress, *The Horse in Motion* (1878); Britannica, "Eadweard Muybridge" and "Gait." Gait speeds are typical ranges and vary by horse. The famous Sallie Gardner series was made in June 1878 with 12 cameras; sources differ on the exact day, so the stop gives only the month. Some stories claim Stanford made a large wager on the question; this is not well documented, so the stop leaves it out. Riding lessons should be with a qualified instructor.

PRACTICE

1. **EASY** How many beats are in the walk? In the trot?
2. **EASY** Which legs move together in the trot?
3. **MEDIUM** A horse is cantering in a circle to the left. Which lead should it be on, and why?
4. **MEDIUM** What did Muybridge's 1878 photographs prove?
5. **CHALLENGE** A trail ride is 6 miles. The group walks the first 2 miles at 4 miles per hour and trots the other 4 miles at 8 miles per hour. How long does the ride take?

Make it a game • Name That Gait. One player turns away and claps or drums a gait rhythm on a table: four even beats (walk), two beats (trot), a rolling three (canter) or a fast four (gallop). The others call out the gait and then move around the room at that pace (walk, jog, skip for the canter, run in place for the gallop). Whoever names it first becomes the next drummer.

Scripture. "If thou hast run with the footmen, and they have wearied thee, then how canst thou contend with horses? and if in the land of peace, wherein thou trustedst, they wearied thee, then how wilt thou do in the swelling of Jordan?" (Jeremiah 12:5, KJV)

God answered Jeremiah's complaint by pointing to harder days ahead: if running with men tires you, how will you keep up with horses? A horse's speed was the picture of a much greater test. God was calling the prophet to grow in strength and trust, step by step, as a rider moves from walk to trot to canter.

Practice: answers

1. The walk has four beats; the trot has two.
2. Diagonal pairs: left fore with right hind, and right fore with left hind.

3. The left lead, because the left front leg reaching forward on the inside of the circle keeps the horse balanced around the turn.
4. That all four of a galloping horse's feet leave the ground at once, but bunched under the belly, not stretched out front and back as painters had drawn them.
5. Walking: $2 \div 4 = \frac{1}{2}$ hour (30 minutes). Trotting: $4 \div 8 = \frac{1}{2}$ hour (30 minutes). Total: 1 hour.

2.7 SAFETY AROUND HORSES

OBJECTIVES

- Explain how a horse's nature as a prey animal shapes the rules of safety.
- Approach, lead and tie a horse (or practice the steps) the safe way.
- Draw a safety diagram showing blind spots, the kick zone and the safe approach.

Warm-up. Sit quietly with your eyes closed while someone sneaks up and suddenly claps behind you. Did you jump? Now imagine you weigh 1,000 pounds, and your first answer to any surprise is to run. That is how a horse lives every day.

Video slot. Video coming. Safety around horses for young people: approaching, leading, tying with a quick-release knot, where not to stand. Search approved channels (Kentucky Horse Park, United States Pony Clubs, 4-H, a university extension horse program); preview first.

KEY TERMS

prey animal

An animal that other animals hunt, and whose first defense is to notice danger and run.

flight response

A horse's instinct to run first and think later when frightened.

blind spot

An area a horse cannot see: just in front of and below its nose, and directly behind it.

lead rope

A rope clipped to the halter, used to lead or tie a horse.

quick-release knot

A tying knot that holds firmly but comes undone with one pull on the loose end, so a frightened horse can be freed fast.

CORE IDEAS

The first rule of horse safety is to understand the horse. Horses are **prey animals**. For thousands of years wild horses survived wolves and big cats by noticing danger early and running away. That **flight response** is still there. A blowing plastic bag, a barking dog or a sudden touch can send a horse spinning or bolting before it has time to think. If it cannot run, it may kick, strike or bite. A horse that does this is usually not mean; it is frightened. Since a horse may weigh ten times as much as a child, most accidents happen when a person surprises it or stands in the wrong place.

Approach a horse from the side, at an angle toward its shoulder, so it can see you with one eye. Speak calmly as you come, so it hears you too. Never walk straight up to its face, where

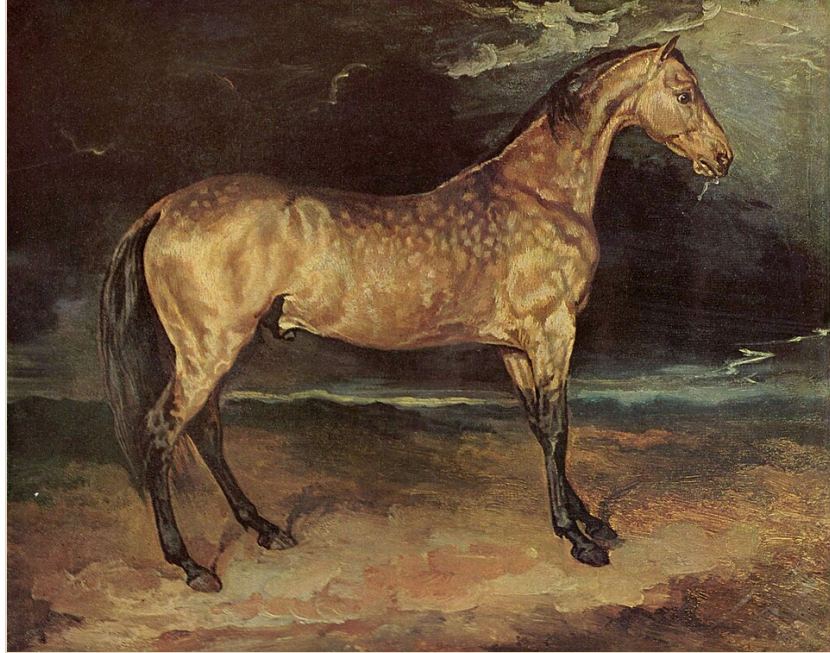
the **blind spot** is in front of its nose, and never come up from directly behind. Let the horse sniff the back of your hand, then touch its shoulder or neck first, not its nose. Around horses, move quietly: no running, shouting or flapping coats and umbrellas.

Never stand directly behind a horse. A horse can kick backward hard enough to break bones, and it can reach well beyond its own tail. If you must pass behind, there are two safe ways: stay well out of reach, more than a horse's length away, or stay very close, with a hand on its hindquarters, talking so it knows where you are. A kick at close range has far less force. Wear sturdy boots, because a horse that steps on your foot may not even notice, and keep fingers, toes and face out of the way when feeding or picking hooves.

Leading: stand on the near (left) side, between the horse's head and its shoulder. Hold the **lead rope** in your right hand about 6 to 12 inches below the halter, and hold the folded extra rope in your left hand. **Never wrap or loop the rope around your hand, wrist or body.** If the horse bolts, a loop can tighten and drag you. Walk forward with purpose, look ahead, and when you turn, turn the horse away from you so it does not step on you. **Tying:** tie to something solid, at about the height of the withers, with about an arm's length of rope, using a **quick-release knot**. Never tie a horse by its bridle reins.

Riding adds a few more rules. Always wear a properly fitted riding helmet certified for horse sports (in the United States, look for an ASTM/SEI label), every ride, even a short one. Wear boots with a small heel so your foot cannot slide through the stirrup. Ride with an adult or instructor nearby, check the tack before you mount, and choose a horse that suits your skill. Riding is enjoyed safely by millions of people; the dangers come mostly from hurry, carelessness and pride.

PICTURE STUDY



Horse Frightened by Lightning, Théodore Géricault, c. 1813-1814 · Oil on canvas · The National Gallery, London
Wikimedia Commons · Public domain

Théodore Géricault (1791-1824) was a French painter who loved horses all his life. He rode, drew and painted them constantly, and he died young, at 32, after riding falls and a long illness. In this small painting, a lone horse in a dark field wheels away as lightning splits the sky. Géricault caught the very moment of the flight response: every muscle ready to run.

Look closely

- Find the horse's ears, eyes and nostrils. How do they show fear?
- Find the lightning. How does the light fall on the horse?
- Look at the legs. Which way is the horse about to go?

Talk about it

1. If you were walking toward this horse right now, what would be the safest thing to do?
2. How does the painter use dark and light to make us feel the horse's fear?

Safety first. This whole stop is about safety. Practice approaching, leading and tying only with an experienced adult and a calm horse, or role-play with a person first. Always wear sturdy boots near horses and a certified riding helmet when riding, never wrap a lead rope around your hand, and never stand directly behind a horse.

HANDS-ON: HORSE SAFETY ZONES DIAGRAM AND LEADING PRACTICE

Draw a bird's-eye safety map of a horse, then practice the leading and tying steps with a partner before you ever try them with a real horse.

You will need

- Paper, pencil, ruler and red, yellow and green colored pencils
- A rope about 8 to 10 feet long (or a jump rope) and a sturdy fence rail or chair back
- A partner to play the horse

Steps

1. Draw a horse seen from above, as if you were a bird: a long oval body, a head and neck at one end and a tail at the other.
2. Shade the two blind spots in red: a small triangle just in front of the nose and a narrow wedge directly behind the tail. Shade the kick zone behind the hindquarters in red too.
3. Shade a green arc beside the left shoulder and label it "safe approach." Draw a small figure standing between the head and shoulder on the near side, labelled "leading position."
4. Shade the areas where the horse can see you clearly in yellow, and add arrows showing which way to turn a horse when leading (away from you, to the right).
5. Leading practice: your partner holds one end of the rope at chin height as the "halter." Stand at their left "shoulder," hold the rope with your right hand a hand's length below the halter and the folded extra in your left hand. Walk, stop and turn right. Check: is the rope ever wrapped around your hand?
6. Tying practice: tie the rope to a rail or chair back with a quick-release knot (pass the end around the rail, form a loop with the loose end, push a folded bight through that loop and snug it toward the rail). Pull the loose end. Does the knot fall open in one pull?

Check your work

- My diagram shows blind spots, the kick zone, the safe approach and the leading position.
- I can lead without wrapping the rope and turn the "horse" away from me.
- I can tie a quick-release knot that opens with one pull.

FIELD NOTEBOOK

1. **Diagram:** Copy your safety zones diagram into the Field Notebook with a key (red = danger, yellow = careful, green = safe approach).
2. **Notebook entry:** Write a paragraph called "Ten Seconds at the Gate." Describe, step by step, how you would approach a horse in a field, put on its halter and lead it to the barn safely, and explain why each step matters.

Did you know? Horses read body language very well. A horse that pins its ears flat back is warning you; ears pricked forward mean it is alert and interested in something ahead; one ear turned back toward a rider usually means it is listening. Swishing tail, raised hind foot and a tense, high head are other warning signs.

Map or diagram. Lay your safety diagram next to your Stop B1 poster. The blind spots come straight from where the eyes are set on the head.

Goes deeper in. Life Science, “Animal Senses and Instincts,” and Gardening & Animals, “Caring for Animals” (coming soon).

For families. Sources: United States Pony Clubs *Manual of Horsemanship*; 4-H horse safety materials; university extension horse safety guides. Barns may differ on small details (some lead with the right hand under the chin, some with a longer hold), but the never-wrap and never-stand-behind rules are universal. The quick-release knot is easier to learn by watching than by reading; have an experienced horse person show it. The picture: Géricault, *Horse Frightened by Lightning*, c. 1813–1814, National Gallery, London.

PRACTICE

1. **EASY** Why does a frightened horse usually try to run?
2. **EASY** From which side, and from where, do you normally lead a horse?
3. **MEDIUM** Why must you never wrap a lead rope around your hand?
4. **MEDIUM** Where are a horse’s two blind spots, and how should you approach because of them?
5. **CHALLENGE** You are leading a horse across a yard when a plastic bag blows toward it, and the horse throws up its head and starts to dance sideways. What should you do, step by step?

Make it a game • Safe or Sorry?. A leader reads out barn situations, such as “Walk straight up to a horse’s tail,” “Speak as you approach the shoulder,” “Loop the rope around your wrist,” “Tie with a quick-release knot,” “Run past the paddock.” Players stand tall and say “Safe!” or crouch and say “Sorry!” Anyone who answers wrong must explain the right way before rejoining.

Scripture. “A prudent man foreseeth the evil, and hideth himself; but the simple pass on, and are punished.” (Proverbs 22:3, KJV)

A prudent person looks ahead, sees danger coming and acts wisely. Around horses, prudence means knowing where to stand, how to hold the rope and when to wear a helmet. The rules are not there to spoil the fun; they let us keep enjoying God’s good creature.

Practice: answers

1. Because it is a prey animal; its instinct (the flight response) is to escape danger by running.
2. From the near (left) side, standing between the horse's head and its shoulder.
3. If the horse spooks or bolts, the loop can tighten around your hand and you can be dragged or badly hurt, because you cannot let go.
4. Just in front of and below its nose, and directly behind it. So approach from the side toward the shoulder, at an angle where the horse can see you, and speak as you come.
5. Stay calm and speak quietly. Keep your position at the shoulder, out of the way of its front feet, and do not get in front of it. Hold the rope firmly with the extra folded in your hand (never wrapped). Turn the horse's head slightly toward you to slow it and let it look at the bag, then lead it on calmly or wait for it to settle. If the horse truly bolts and you cannot hold it, let go rather than be dragged, and tell an adult.

2.8 ENGLISH AND WESTERN RIDING; DRESSAGE, JUMPING AND BARREL RACING

OBJECTIVES

- Compare English and Western riding: their history, saddles and way of steering.
- Describe how dressage, show jumping and barrel racing are scored.
- Draw a dressage arena with its letters and a barrel-racing pattern.

Warm-up. Hold an imaginary pair of reins, one in each hand, and steer left and right by gently pulling one side. Now hold both in one hand and steer by moving that hand left and right. Which would leave your other hand free to swing a rope?

Video slot. Video coming. English versus Western riding explained; a dressage test, a show-jumping round and a barrel-racing run. Search approved channels (Kentucky Horse Park, United States Pony Clubs, 4-H, US Equestrian, the Spanish Riding School); preview first.

KEY TERMS

English riding

A style of riding from European and British traditions, using a small, flat saddle and a rein in each hand.

Western riding

A style of riding from the cattle ranches of Mexico and the American West, using a deep saddle with a horn and often one hand on the reins.

neck reining

Steering by laying the rein against the horse's neck, so the horse moves away from the touch; used in Western riding with one hand.

dressage

A sport and art in which horse and rider perform exact movements in an arena, judged for obedience, balance and grace. The word is French for “training.”

barrel racing

A timed rodeo event in which horse and rider run a cloverleaf pattern around three barrels as fast as possible.

CORE IDEAS

Two great traditions of riding are common in America today. **English riding** grew from the riding schools and cavalry of Europe and the hunting fields of Britain. The saddle is small and flat, so the rider sits close to the horse. The rider holds a rein in each hand and keeps a light, steady contact with the horse's mouth, and rises and sits in the trot (“posting”).

Western riding grew from the Spanish horsemen who brought horses and cattle to Mexico and from the *vaqueros*, the Mexican cowboys, whose skills passed to the cowboys of the American West in the 1800s. Their saddle is large and deep for long days of work, with a horn in front for wrapping a rope when roping a steer. Western riders often use **neck reining**, steering with one hand and leaving the other free.

Dressage, from the French word for “training,” is the oldest of the English sports in spirit. Around 350 BC the Greek soldier Xenophon wrote *On Horsemanship*, urging riders to train by patience and reward, not anger. During the Renaissance, riding masters in Italy, France and Austria built that into an art. The Spanish Riding School in Vienna, first recorded in 1565, still trains its white Lipizzaner horses there. In a dressage test, horse and rider perform set movements at marked letters around the arena. Judges score each movement from 0 to 10. Dressage has been an Olympic sport since 1912.

Show jumping tests courage and care. Horse and rider jump a course of colored fences in a set order within a time limit. Knocking down a rail costs 4 faults; a refusal (the horse stops at a fence) also costs 4 faults; going too slowly adds time faults. Riders who finish with no faults may ride a faster “jump-off” to decide the winner. At the top level, fences can be over 5 feet high. **Eventing** combines dressage, cross-country jumping and show jumping, a test that began as a trial for army horses.

Barrel racing is a Western rodeo event. Three barrels stand in a triangle. The horse races in, circles each barrel in a cloverleaf pattern and sprints home. The fastest time wins, and knocking over a barrel adds a 5-second penalty. Top runs in a large arena often take about 14 to 17 seconds. Most barrel horses are American Quarter Horses, prized for quick starts and tight turns. Other Western events, such as reining, cutting and team roping, come straight from the work of the cattle ranch.

English or Western, the same truths hold. A rider must keep balance and gentle hands, learn the gaits, care for the horse before and after every ride and wear a helmet. The two styles look different because they grew up for different work, one for the hunting field and the parade ground, the other for the cattle range. A good horseman respects both and chooses by what he or she hopes to do.

PICTURE STUDY



The Bronco Buster, Frederic Remington, 1895 · Bronze sculpture · Casts in many museums, including the Metropolitan Museum of Art, New York
Wikimedia Commons · Public domain

Frederic Remington (1861–1909) was an American painter, illustrator and sculptor who traveled the West and drew cowboys, soldiers and horses. *The Bronco Buster*, his first sculpture, shows a cowboy riding a wild, bucking horse with a Western saddle and one rein. It was so popular that many casts were made; one stands in the Oval Office of the White House. The whole heavy sculpture balances on the horse's two hind hooves.

Look closely

- Find the saddle horn and the stirrups. What kind of saddle is this?
- Find the cowboy's hands. How many hands are on the rein, and what is the other doing?
- Walk around the sculpture in your mind. Where does all the weight rest?

Talk about it

1. In Remington's day, "breaking" a horse was often rough. How do patient trainers today, following ideas as old as Xenophon, start a young horse instead?
2. How is the movement in this sculpture different from a calm dressage horse?

Safety first. Every riding sport, English or Western, needs a properly fitted, certified riding helmet, boots with a heel, sound tack, a suitable horse and a qualified instructor. Jumping and speed events come only after a rider is secure at all the gaits, and only with an instructor's permission.

HANDS-ON: ARENA DIAGRAMS AND AN ENGLISH-WESTERN COMPARISON

Draw two arena diagrams to scale, then make a Venn diagram comparing English and Western riding.

You will need

- Graph paper, ruler, pencil and colored pencils
- A compass or a round lid (for the barrel circles)

Steps

1. Dressage arena: a small arena is 20 meters wide and 40 meters long. On graph paper, let 1 square = 2 meters, so draw a rectangle 10 squares by 20 squares.
2. Mark the letters around the edge, starting at the entrance at one short end and going clockwise: A (middle of the short end), K, E, H, C (middle of the far short end), M, B, F. Put K, H, M and F 6 meters (3 squares) from the corners, and E and B in the middles of the long sides. Mark X in the center. (A saying to remember them: "All King Edward's Horses Can Make Big Fences.")
3. Draw a 20-meter circle at C, touching the sides of the arena, and a straight line from A through X to C.
4. Barrel pattern: in a common full-size pattern, the first and second barrels are 90 feet apart and the third barrel is 105 feet from each. Let 1 square = 10 feet. Draw the start line and the three barrels, then draw the cloverleaf path with arrows: around barrel 1 to the right, barrel 2 to the left, barrel 3 to the left, then straight home.
5. Venn diagram: draw two overlapping circles labelled English and Western. Write at least four facts in each circle and three in the middle (for example: saddle, steering, history, sports, clothing, helmet, care of the horse).

Check your work

- My dressage arena has all eight letters and X in the right places.
- My barrel pattern shows the cloverleaf path and the distances.
- My Venn diagram has at least four facts in each circle and three in the middle.

FIELD NOTEBOOK

1. **Diagram:** Copy your dressage arena and barrel pattern into the Field Notebook, side by side, with a title: "Two Arenas."
2. **Notebook entry:** Write a paragraph about which riding style or sport you would most like to try and why. Use at least three facts from this stop, and tell what you would need to learn first from earlier stops on this trail.

Did you know? The Lipizzaner horses of the Spanish Riding School are born dark and turn white (gray) as they grow, usually between about six and ten years old. Their most

famous movements, the “airs above the ground,” include the capriole, in which the horse leaps and kicks out with its hind legs in midair.

Map or diagram. On a world map, trace the journey of riding traditions: from Greece (Xenophon) and Spain, to Vienna (the Spanish Riding School), and from Spain across the Atlantic to Mexico and up into Texas and the American West.

Goes deeper in. History, “The American West” and “The Renaissance,” Geography, “Mexico and the American Southwest,” and Arithmetic, “Scale Drawings” (coming soon).

For families. Sources: Fédération Équestre Internationale (FEI) rules for dressage and jumping; Women’s Professional Rodeo Association barrel pattern guidelines; Spanish Riding School of Vienna; Britannica, “Dressage” and “Xenophon.” Barrel distances vary with arena size; 90 and 105 feet are the standard maximums. Jumping fault rules are simplified (for example, a second refusal usually means elimination). The picture: Remington, *The Bronco Buster*, modeled 1895; casts are in many collections.

PRACTICE

1. **EASY** What does the word “dressage” mean?
2. **EASY** What is neck reining?
3. **MEDIUM** In show jumping, a horse knocks down one rail and refuses one fence. How many faults is that?
4. **MEDIUM** A barrel racer’s time is 15.4 seconds, but one barrel was knocked over. What is the final time? Would it beat a clean run of 17.9 seconds?
5. **CHALLENGE** Explain how the work each style grew up for explains its saddle and its way of steering.

Make it a game • Living Barrel Race. Set three chairs or buckets in a triangle in the yard. Each player “rides” the cloverleaf pattern on foot while someone times it with a stopwatch. Knock over a barrel and add 5 seconds. Then try a “dressage test”: walk to letters marked on paper plates (A, K, E, H, C, M, B, F) in an order the judge calls out, and the judge scores your accuracy from 0 to 10.

Scripture. “The horse is prepared against the day of battle: but safety is of the LORD.” (Proverbs 21:31, KJV)

Every riding sport depends on preparation: years of patient training for horse and rider. Solomon honors that work, but he reminds us that our safety and success finally come from the Lord. We train and prepare with all our hearts, and we trust God with the outcome.

Practice: answers

1. Training (it is French).

2. Steering by laying the rein against the horse's neck so it moves away from the touch, usually with one hand, as in Western riding.
3. 8 faults (4 for the rail plus 4 for the refusal).
4. $15.4 + 5 = 20.4$ seconds. No; the clean 17.9-second run wins.
5. Western riding grew from long days of cattle work: the deep saddle is comfortable for hours, the horn holds a rope when roping cattle, and neck reining with one hand leaves the other hand free for the rope or gate. English riding grew from cavalry schools and the hunting field: the small, flat saddle keeps the rider close to the horse for jumping and fine control, and two-handed contact lets the rider give exact signals for collected and precise movements.

TRAIL 2 BADGE QUIZ

The badge quizzes are optional. The student answers in writing, using diagrams where helpful; a parent checks with the answers. Four right out of five earns the first badge; five right out of six earns the second. Badges and the certificate are earned by doing the stops, not by scores.

Badge quiz 1 (Stops 1–5)

1. Name the joint on a horse's hind leg that matches the human ankle, and say which side of the horse is the near side.
2. Where does the bit rest in a horse's mouth, and how does a curb differ from a snaffle?
3. Put these grooming tools in the order they are used on the body: body brush, curry comb, dandy brush.
4. Why must a farrier's nails go outside the white line? About how often does a horse need the farrier?
5. A horse weighs 900 pounds and eats 2 percent of its weight daily. How many pounds of food is that per day, and why should most of it be forage?

Badge quiz 2 (Stops 6–8)

6. How many beats are in the canter, and what is the lead?
7. What question did Muybridge's 1878 photographs answer, and what was the answer?
8. Give three rules for leading a horse safely.
9. Why is a horse's first reaction to fear usually to run, and how should you approach a horse because of it?
10. Name one difference between an English and a Western saddle, and give the penalty for knocking over a barrel in barrel racing.
11. What is dressage, and how is a dressage test scored?

TRAIL CERTIFICATE: MY HORSEMAN'S FIELD NOTEBOOK AND TRAIL B CERTIFICATE

Gather your eight diagrams into one section of the Field Notebook titled "Riding and Care," with your name and dates: the parts poster (or a photo of it), the tacked-up horse, the grooming map, the hoof diagram, the costed care chart and digestive diagram, the footfall charts, the safety-zones map and the two arena plans.

Add your eight notebook paragraphs, one per stop. Choose your best one and copy it out neatly as a final page, "What Every Horseman Should Know."

Present the notebook to your family: explain one diagram, demonstrate the leading position and a quick-release knot, and tell what a horse costs each month. When it is done, a parent signs the Trail B certificate.

- **Diagrams:** Eight neat diagrams with straight leader lines and correct labels, using the proper names for the points of the horse and tack.

- **Knowledge:** The student explains grooming, hoof care, feeding, the gaits and the riding traditions accurately, in their own words.
- **Numbers:** The care chart, hoof-growth and gait problems show clear, correct working, with units.
- **Safety and stewardship:** The student can state and demonstrate the safety rules and explains, with Proverbs 12:10, why caring for a horse is a serious responsibility.

Answer key

1. The hock; the near side is the left side.
2. On the bars, the bare gum between the front and back teeth. A snaffle acts directly; a curb has shanks and a chin chain and works by leverage.
3. Curry comb, dandy brush, body brush.
4. Outside the white line is the insensitive hoof wall with no nerves; inside it is sensitive tissue that would be hurt. About every six to eight weeks.
5. 18 pounds. Horses are built to digest fiber steadily in the hindgut (the cecum); a diet mostly of hay or grass keeps digestion healthy and helps prevent colic.
6. Three beats. The lead is the front leg that reaches farthest forward; a horse circling left should be on the left lead.
7. Whether all four of a galloping horse's feet leave the ground at once. Yes, they do, but tucked under the belly, not stretched out.
8. Any three: lead from the near (left) side; stand between the head and the shoulder; hold the rope 6 to 12 inches below the halter with the extra folded in the other hand; never wrap the rope around your hand or body; turn the horse away from you; walk with purpose, looking ahead; wear sturdy boots.
9. It is a prey animal with a strong flight response. Approach from the side toward the shoulder, where it can see you, speaking calmly, never from directly behind or straight at its face.
10. Any one: the English saddle is small and flat with no horn; the Western saddle is large and deep with a horn for a rope (and is heavier). Knocking over a barrel adds 5 seconds.
11. Dressage (French for "training") is a sport in which horse and rider perform exact movements at marked letters in an arena; judges score each movement from 0 to 10.

HORSES TRAIL C: FAMOUS HORSES IN HISTORY

The third trail of the Horses track follows famous horses through history: Bucephalus and young Alexander the Great; the horses of the Bible, from the war horse of Job 39 to Pharaoh's chariots and the white horse of Revelation 19:11; Marengo and Copenhagen at Waterloo; the riders and horses of the Pony Express; Traveller and Cincinnati, the horses of Lee and Grant; Sergeant Reckless, the Korean War packhorse; Seabiscuit, the underdog of 1938; and Secretariat's record-breaking Belmont of 1973.

This is the ● **Ranger** level, for ages 10 to 13. The student reads each stop alone, in about 25 to 35 minutes, then does a map or diagram, a short written notebook entry and five practice questions with answers to check. Every stop stands by itself, and each one adds a page to a **Famous Horses timeline** in the Field Notebook, running from 344 B.C. to A.D. 1973.

Five stops earn the **Horse Ranger badge, part 1**; eight stops earn part 2 and the **Trail C certificate**.

BEFORE YOU BEGIN

- Read a passage of about 500 words alone and write a paragraph about it.
- Multiply and divide whole numbers, and read a map with a scale and compass rose.

MASTERY CHECKLIST

- ☐ I can place eight famous horses on a timeline with their riders, dates and places.
- ☐ I can tell what Scripture says about the horse in Job 39, Exodus 14-15 and Revelation 19, and why we trust God rather than horses.
- ☐ I can draw and label maps of Alexander's route, the Waterloo field and the Pony Express trail.
- ☐ I can use numbers from history (hands, miles, pounds, lengths and times) to work out heights, distances and speeds.
- ☐ I have written eight notebook entries about famous horses.

OPTIONAL BOOKS AND RESOURCES

- **Plutarch's *Lives*, "Alexander" (Project Gutenberg)**
(<https://www.gutenberg.org/ebooks/search/?query=plutarch+lives>): Free public-domain text of the Dryden translation; chapter 6 tells the taming of Bucephalus. Read it aloud together for Stop C1.
- **Pony Express National Historic Trail (National Park Service)**
(<https://www.nps.gov/poex>): Free maps, station histories and photographs for Stop C4.
- **Appomattox Court House National Historical Park (National Park Service)**
(<https://www.nps.gov/apco>): The surrender story, the McLean house and Grant's terms

for Stop C5.

- **National Museum of the Marine Corps** (<https://www.usmcmuseum.com>): Home of the Sergeant Reckless statue; information for Stop C6.
- **National Museum of Racing and Hall of Fame** (<https://www.racingmuseum.org>): Hall of Fame pages for Seabiscuit, War Admiral and Secretariat for Stops C7 and C8.
- **Kentucky Horse Park: International Museum of the Horse** (<https://kyhorsepark.com>): Exhibits on the horse in history, from ancient chariots to the cavalry; good for the whole trail.

3.1 BUCEPHALUS AND YOUNG ALEXANDER

OBJECTIVES

- Retell Plutarch’s account of how young Alexander tamed Bucephalus, in order and with the key details.
- Explain how careful observation (the horse’s shadow) solved a problem that force could not.
- Trace Bucephalus’s journey from Macedonia to the Hydaspes River on a labeled map.

Warm-up. Go outside on a sunny day, or stand by a lamp. Face away from the light: where is your shadow? Now face toward the light: where did it go? Keep this in mind. A twelve-year-old boy once used this simple fact to win the most famous horse in history.

Video slot. Video coming. Alexander the Great and Bucephalus; Plutarch’s story of the taming; Alexander’s route to India. Search approved channels (Smithsonian, British Museum, Kentucky Horse Park, Homeschool Pop (Alternate)); preview first.

KEY TERMS

Macedonia

An ancient kingdom north of Greece, ruled by King Philip II and then by his son Alexander. Its capital was Pella.

Plutarch

A Greek writer (about A.D. 46–120) whose *Lives* tell the stories of famous Greeks and Romans. He gives us the story of Bucephalus.

talent

In the ancient world, a large weight of silver (roughly 57 pounds) used as a sum of money.

Bucephalus

Alexander’s war horse. The name means “ox-head” in Greek (say “byoo-SEF-uh-lus”).

Hydaspes

A river in present-day Pakistan, now called the Jhelum, where Alexander fought his last great battle in 326 B.C.

CORE IDEAS

About 344 B.C., a horse dealer named Philonicus came from Thessaly, a land famous for its horses, to the court of King Philip II of Macedonia. He brought a big, powerful black horse and asked thirteen **talents** for him, an enormous price. The king and his officers went out to a field to try the horse. But the animal reared and plunged and would let no one near his back. Disgusted, Philip ordered him led away.

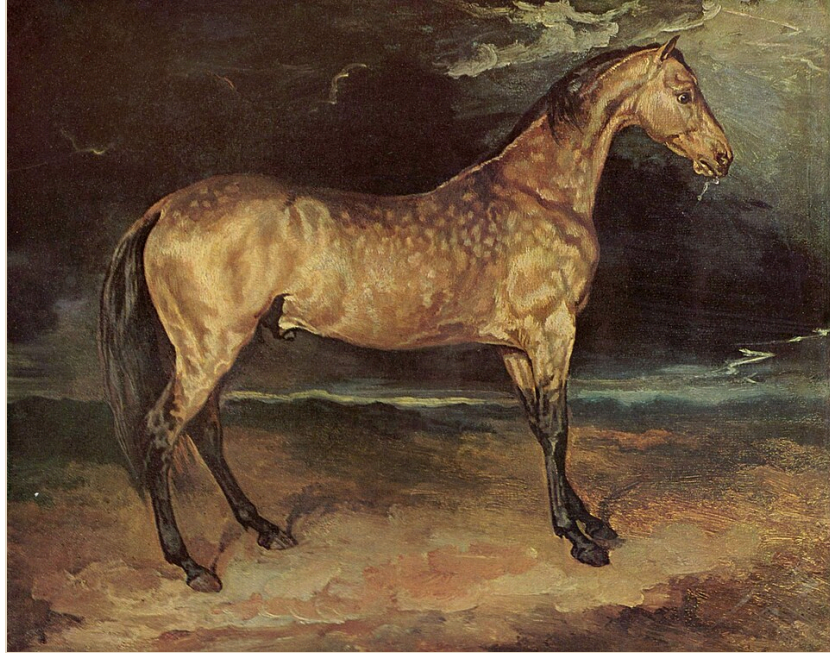
Philip's son Alexander, a boy of about twelve, had been watching closely. He complained aloud that they were losing a wonderful horse only because they lacked the skill and courage to handle him. His father, half annoyed, asked whether he thought he knew better than grown men. Alexander said he could manage this horse better than anyone, and he promised that if he failed he would pay the whole price himself. The men laughed, and Philip let him try.

Alexander had noticed what the others missed: the horse was frightened by his own **shadow**, which leaped and jerked on the ground in front of him every time he moved. So the boy took the bridle and quietly turned the horse's head toward the sun. Now the shadow fell behind, where the horse could not see it. Alexander stroked him and spoke gently, let his cloak drop, and sprang onto his back. He held the reins lightly, and when the horse was calm and eager he let him gallop. When he rode back, the watchers cheered. Plutarch says Philip wept for joy, kissed his son, and told him, "O my son, look thee out a kingdom equal to and worthy of thyself, for Macedonia is too little for thee."

The horse was named **Bucephalus**, "ox-head." Ancient writers disagree about why: perhaps for his broad forehead, or for a brand shaped like an ox's head. One writer, Arrian, says he was black with a white mark on his face. For about seventeen years Bucephalus carried Alexander in war: across the Hellespont into Asia in 334 B.C., through great battles at the Granicus River (334), Issus (333) and Gaugamela (331), and across Persia toward India. Once, near the Caspian Sea, tribesmen stole him. Alexander was so furious that they quickly brought him back.

In 326 B.C. Alexander fought King Porus at the **Hydaspes** River in present-day Pakistan. Soon afterward Bucephalus died, about thirty years old, which is very old for a war horse. Arrian says he died of age and weariness; other writers say of wounds. Alexander founded a city on the river and named it **Bucephala** in his honor. The boy who had won him by patience and sharp eyes never forgot him.

PICTURE STUDY



Horse Frightened by Lightning, Théodore Géricault, c. 1813-1814 · Oil on canvas · The National Gallery, London
Wikimedia Commons · Public domain

Théodore Géricault (1791-1824) was a French painter who loved horses more than almost any other subject. He rode, sketched in stables and painted horses in every mood. Here he shows a horse at the very moment fear takes hold of it: the same kind of fear Alexander had to calm in Bucephalus.

Look closely

- Look at the horse's head, ears and eyes. Where is it looking? What do its ears tell you?
- Find the light in the picture. Where does it fall on the horse's body?
- Look at the land and sky. How does the painter make the scene feel lonely and tense?

Talk about it

1. If you had to calm this horse the way Alexander calmed Bucephalus, what would you do first, and why?
2. Why might a painter choose to show a horse afraid instead of proud and brave?

Safety first. Alexander's trick is a story, not a lesson plan. Never approach a strange, frightened or rearing horse. Around real horses, follow an experienced adult, speak quietly, approach at the shoulder where the horse can see you, and never stand behind a horse.

HANDS-ON: MAP: THE LONG ROAD OF BUCEPHALUS

Bucephalus traveled farther than almost any horse in ancient history. Draw a map of his journey with Alexander.

You will need

- A large sheet of paper
- A printed or atlas map of the eastern Mediterranean, the Middle East and Pakistan to copy from
- Pencil, colored pencils and a ruler

Steps

1. Lightly sketch the coastlines: the Mediterranean Sea, the Black Sea, the Caspian Sea, the Persian Gulf and the Arabian Sea.
2. Label these places with dots: Pella (Macedonia), the Hellespont, the Granicus River, Issus, Alexandria (Egypt), Gaugamela, Babylon, Persepolis and the Hydaspes River.
3. Draw Alexander's route as a red line with arrows, from Pella to the Hydaspes. Write the battle years beside Granicus (334 B.C.), Issus (333 B.C.) and Gaugamela (331 B.C.).
4. Draw a small horse-head symbol at the Hydaspes and label it "Bucephala, 326 B.C."
5. Add a compass rose and a title. Using the atlas scale, measure the straight-line distance from Pella to the Hydaspes (it is nearly 3,000 miles) and write it in a box.

Check your work

- My map shows the seas, at least eight labeled places and the route with arrows.
- The three battles have their years.
- I measured and wrote the straight-line distance.

FIELD NOTEBOOK

1. **Diagram:** Draw the sun, Alexander and Bucephalus from the side. Draw two arrows: one showing the sunlight, one showing where the shadow falls. Label "sun," "shadow," "before: horse faces away from the sun" and "after: horse faces the sun."
2. **Notebook entry:** Write a paragraph. What did Alexander notice that the grown men missed? What does this story teach about patience and paying attention, with animals or with people?

Did you know? If Bucephalus died in 326 B.C. at about thirty, he was born about 356 B.C., the same year as Alexander. Remember that B.C. years count down toward the birth of Christ, so you add to go back in time. Plutarch also says that when Bucephalus wore his royal trappings, he would let no one but Alexander ride him.

Map or diagram. The Hydaspes is now the Jhelum River in Pakistan. Find it on a modern map, flowing out of the Himalayas into the Indus system.

Goes deeper in. History, “Ancient Greece and Alexander the Great,” and Geography, “The Middle East and South Asia” (coming soon).

For families. Sources: Plutarch, *Life of Alexander*, chapter 6 (the taming; the quotation is from the Dryden translation as revised by Clough, public domain) and chapter 44 (the theft); Arrian, *Anabasis* 5.19 (Bucephalus’s death and the city of Bucephala). Plutarch does not give Alexander’s exact age; about twelve is the usual estimate. In the story Alexander promises to pay the price if he fails; we leave the wager out of the retelling. The value of a talent varied by city; 57 pounds of silver is an approximate Attic talent. Ancient writers disagree about the name and the cause of death, as the story says.

PRACTICE

1. **EASY** What does the name Bucephalus mean?
2. **EASY** What was the horse afraid of when Alexander first saw him?
3. **MEDIUM** Why did turning the horse toward the sun calm him?
4. **MEDIUM** Bucephalus died in 326 B.C. at about age 30. About what year was he born? Explain why you add instead of subtract.
5. **CHALLENGE** Philonicus asked 13 talents. If a talent was about 57 pounds of silver, about how many pounds of silver was the price?

Make it a game • Shadow Tag. Play outdoors on a sunny day. The tagger tags you by stepping on your shadow, not by touching you. Players soon learn Alexander’s lesson: face the sun and your shadow falls safely behind you. Change taggers after each catch.

Scripture. “The horse is prepared against the day of battle: but safety is of the LORD.” (Proverbs 21:31, KJV)

Alexander had the finest war horse in the world and won great battles, yet he died young, at thirty-two, and his empire broke apart. Solomon reminds us that horses and armies are real, but our safety rests in God.

Practice: answers

1. “Ox-head.”
2. His own shadow moving on the ground.
3. With the sun in front, the shadow fell behind him where he could not see it, so the thing frightening him disappeared.
4. About 356 B.C. B.C. years count down toward the birth of Christ, so earlier years have bigger numbers: $326 + 30 = 356$.
5. $13 \times 57 = 741$, so about 741 pounds of silver.

3.2 HORSES OF THE BIBLE

OBJECTIVES

- Read Job 39:19–25 and name at least four things God says about the horse.
- Tell what happened to Pharaoh’s chariots at the Red Sea, using Exodus 14 and 15.
- Explain who rides the white horse of Revelation 19:11 and why Scripture warns against trusting in horses.

Warm-up. Open a Bible to Job 39:19–25 and read it aloud slowly, as if you were a news reporter describing a horse in battle. Which words sound loud? Which words show courage?

Video slot. Video coming. Ancient Egyptian chariots; horses in the ancient Near East; Tutankhamun’s chariots. Search approved channels (Smithsonian, British Museum, The Metropolitan Museum of Art, Kentucky Horse Park); preview first.

KEY TERMS

chariot

A light, two-wheeled cart pulled by horses and used in war. An Egyptian chariot usually carried a driver and an archer.

horseman

In the King James Bible, a soldier who rides a horse; a cavalryman.

Exodus

The second book of the Bible, which tells how God brought Israel out of slavery in Egypt. The word means “a going out.”

Revelation

The last book of the Bible, given to the apostle John, which shows the final victory of Jesus Christ.

shekel

A weight of silver used as money in Bible times, a little less than half an ounce.

CORE IDEAS

The horse appears in the Bible well over a hundred times, but almost never pulling a plow. In Bible lands, farmers worked with oxen and rode donkeys. Horses belonged to kings and armies. So when Scripture speaks of the horse, it usually speaks of **strength** and **power**, and it asks a hard question: where will you put your trust?

The grandest horse in Scripture is in **Job 39:19–25**. Job had suffered terribly and wanted answers. God spoke to him out of a whirlwind and asked him question after question about creation. One was about the war horse: “Hast thou given the horse strength? hast thou

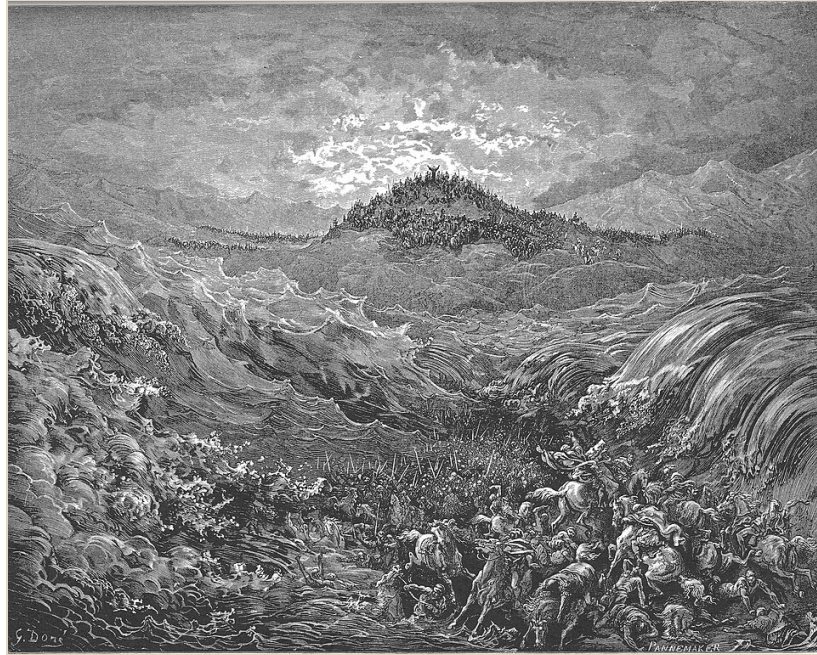
clothed his neck with thunder?" God describes a horse that paws the ground, "mocketh at fear," does not turn back from the sword, "swalloweth the ground with fierceness and rage," and at the sound of the trumpet cries, "Ha, ha." Job could not make such a creature or give it courage. God could, and did.

The most famous horses in the Old Testament are **Pharaoh's chariots**. After God brought Israel out of Egypt, Pharaoh changed his mind and chased them. Exodus 14:7 says he took "six hundred chosen chariots, and all the chariots of Egypt." Egyptian chariots of that age were marvels: light frames of wood and leather, two horses, two spoked wheels, a driver and an archer. When God opened the Red Sea, Israel walked through on dry ground. The Egyptians followed, but God "took off their chariot wheels, that they drave them heavily" (14:25), and the waters returned. Moses sang: "the horse and his rider hath he thrown into the sea" (15:1).

God later told Israel that its king "shall not multiply horses to himself, nor cause the people to return to Egypt" (Deuteronomy 17:16). Yet King Solomon bought great numbers of horses and chariots from Egypt. First Kings 10:29 even gives prices: a chariot for 600 **shekels** of silver and a horse for 150. David had written the better way in Psalm 20:7: "Some trust in chariots, and some in horses: but we will remember the name of the LORD our God."

The Bible's last great horse is in **Revelation 19:11**. John saw heaven opened, "and behold a white horse; and he that sat upon him was called Faithful and True." Five verses later the rider's name is written: "KING OF KINGS, AND LORD OF LORDS." This is Jesus Christ coming in victory. In the ancient world a conqueror might ride a white horse in triumph. Pharaoh's chariots sank, and Solomon's horses passed away, but this Rider will never fail.

PICTURE STUDY



The Egyptians Drowned in the Red Sea, Gustave Doré, 1866 · Wood engraving, from Doré's illustrated Bible
· Published in Doré's illustrated Bible (Tours, 1866); copies in many libraries and museums
Wikimedia Commons · Public domain

Gustave Doré (1832–1883) was a French artist who illustrated great books, including the whole Bible. His engravings were printed in thousands of family Bibles. Here he shows the end of Pharaoh's army in Exodus 14.

Look closely

- Find the horses. How does Doré show that they cannot escape?
- Find a chariot or a wheel. Compare it with Exodus 14:25.
- Where is the light brightest? Where is it darkest?

Talk about it

1. Why did Pharaoh's horses and chariots, the best army of his day, fail to save him?
2. How does this picture help you understand Psalm 20:7?

HANDS-ON: DIAGRAM: AN EGYPTIAN WAR CHARIOT

Make a labeled diagram of the kind of chariot Pharaoh's army used.

You will need

- Paper and a pencil
- A ruler and colored pencils
- A library book or museum web page showing an Egyptian chariot (optional)

Steps

1. Draw a chariot from the side: a small open box (the cab) sitting on an axle at the very back, with one large wheel showing.
2. Give the wheel six spokes, the usual number for Egyptian war chariots of Moses' age.
3. Draw a long pole running forward from the cab to a yoke across the necks of two horses.
4. Draw two people standing in the cab: a driver holding the reins and an archer with a bow, and a quiver on the side of the cab.
5. Label: cab, axle, wheel, spokes, pole, yoke, reins, quiver, driver, archer, horses. Title it "Exodus 14:7: six hundred chosen chariots."

Check your work

- My diagram has at least ten labels.
- The wheel has six spokes and the axle is at the back of the cab.
- I wrote the Scripture reference as the title.

FIELD NOTEBOOK

1. **Chart:** Make a three-row chart titled "Horses of the Bible." Columns: Reference, What the horse does, What it teaches. Rows: Job 39:19–25, Exodus 14:23–15:1, Revelation 19:11.
2. **Notebook entry:** Write a paragraph explaining Psalm 20:7 in your own words. What are some "chariots and horses" people trust in today instead of God?

Did you know? When Howard Carter opened the tomb of King Tutankhamun in 1922, he found six chariots inside, taken apart to fit through the doorways. They show how light and skillfully built Egyptian chariots were, with leather, wood and gold.

Map or diagram. On a map of Egypt and Sinai, find the Nile Delta, the Gulf of Suez and the Sinai Peninsula. Scholars debate the exact crossing place; mark the general region between Egypt and Sinai.

Goes deeper in. History, "Ancient Egypt and the Exodus," and Literature, "Poetry of the Bible: Job and the Psalms" (coming soon).

For families. All Scripture quotations are from the King James Version. The count of horse references varies with how one counts "horse," "horses" and "horsemen," so the stop says "well over a hundred." First Kings 4:26 and 2 Chronicles 9:25 give different numbers of Solomon's stalls (forty thousand and four thousand), a known copying question; the stop uses the prices in 1 Kings 10:29 instead. The six-spoked wheel is typical of New Kingdom Egyptian chariots. The Doré engraving shows the drowning of the army without gore, but preview it for sensitive children.

PRACTICE

1. **EASY** How many “chosen chariots” did Pharaoh take to chase Israel (Exodus 14:7)?
2. **EASY** In Revelation 19:11, what color is the horse, and what is its rider called?
3. **MEDIUM** Name four things Job 39:19–25 says about the horse.
4. **MEDIUM** In 1 Kings 10:29 a chariot cost 600 shekels and a horse 150. How many horses could be bought for the price of one chariot? What did a chariot with a team of two horses cost?
5. **CHALLENGE** Job 39 praises the horse’s strength, but Psalm 33:17 says “an horse is a vain thing for safety.” Are these in conflict? Explain.

Make it a game • Sword Drill: Horse Verses. Players hold closed Bibles. A leader calls a reference (Job 39:19, Exodus 15:1, Psalm 20:7, Psalm 33:17, Proverbs 21:31, Zechariah 14:20, Revelation 19:11). The first to find it stands and reads it aloud. Score one point for each; then tell what the verse says about horses.

Scripture. “And I saw heaven opened, and behold a white horse; and he that sat upon him was called Faithful and True, and in righteousness he doth judge and make war.” (Revelation 19:11, KJV)

Every other horse in this trail grew old and died, and every rider with it. The Rider on the white horse is Christ, who is faithful and true, and His victory is certain.

Practice: answers

1. Six hundred, plus all the other chariots of Egypt.
2. White; the rider is called Faithful and True. He is Jesus Christ.
3. Any four: God gave it strength; its neck is clothed with thunder; it paws in the valley; it rejoices in its strength; it mocks at fear; it does not turn back from the sword; it swallows the ground; it says “Ha, ha” among the trumpets; it smells the battle afar off.
4. $600 \div 150 = 4$ horses. A chariot and two horses: $600 + 150 + 150 = 900$ shekels.
5. No. Both are true: God made the horse truly strong (Job), but strength cannot save anyone in the end; safety comes from the LORD (Psalm 33:17; Proverbs 21:31). We may admire and use God’s gifts without trusting in them instead of Him.

3.3 MARENGO AND COPENHAGEN AT WATERLOO

OBJECTIVES

- Tell when and where the Battle of Waterloo was fought and who led each side.
- Compare Marengo and Copenhagen: color, size, breeding and later life.
- Draw and label a simple map of the Waterloo battlefield.

Warm-up. Think of the longest day you have ever had. How many hours were you awake? On one day in 1815, a chestnut horse carried his rider for about seventeen hours, through smoke and noise, and still had the spirit to kick at the end.

Video slot. Video coming. The Battle of Waterloo explained for students; Wellington's horse Copenhagen; Marengo's skeleton at the National Army Museum. Search approved channels (National Army Museum, Smithsonian, Kentucky Horse Park); preview first.

KEY TERMS

Waterloo

A village south of Brussels, Belgium, near where Napoleon was finally defeated on June 18, 1815.

Napoleon Bonaparte

A French general who made himself Emperor of the French (1804) and conquered much of Europe.

Duke of Wellington

Arthur Wellesley, the British general who commanded the allied army at Waterloo.

charger

A horse trained to carry an officer in battle: brave, steady and strong.

bottom

An old horseman's word for a horse's staying power and courage to keep going when tired.

CORE IDEAS

On Sunday, June 18, 1815, two great armies met in rolling fields near the village of **Waterloo**, about twelve miles south of Brussels. On one side was **Napoleon Bonaparte**, who had escaped from exile that spring to take back his throne. On the other was the **Duke of Wellington** with an army of British, Dutch, Belgian and German soldiers. In the afternoon a Prussian army under Marshal Blücher arrived from the east. In those days a general rode up and down the field to see the battle and send orders. His **charger** was not a luxury; it was part of his command.

Napoleon's most famous horse was **Marengo**, a small gray Arabian, only about 14.1 hands. Tradition says he came to France from Egypt after Napoleon's campaign there in 1798-1799 and was named for Napoleon's victory at Marengo in Italy in 1800. He is said to have carried the emperor at Austerlitz, on the long retreat from Moscow in 1812, and at Waterloo. Napoleon owned many horses, and historians debate how much of Marengo's story is certain. But the tradition says that after the battle a British officer took him, and he was brought to England, where he lived to about 38 and died in 1831. His skeleton stands today in the National Army Museum in London.

Wellington's horse was **Copenhagen**, a chestnut stallion foaled in 1808, about 15 hands, part Thoroughbred and a grandson of the great racehorse Eclipse. He was named for the British siege of Copenhagen in 1807. He ran a few races, then went to war; Wellington bought him in Spain and rode him in the Peninsular War.

At Waterloo, Wellington rode Copenhagen from early morning until late at night, about seventeen hours. The battle cost tens of thousands of men killed or wounded on both sides, and thousands of horses. By evening Napoleon's army was broken. When Wellington finally swung down from the saddle, tired Copenhagen kicked out and nearly struck him. Wellington later said, "There may have been many faster horses, no doubt many handsomer, but for **bottom** and endurance I never saw his fellow."

Napoleon gave up his throne four days after the battle and was sent to the island of St. Helena in the South Atlantic, where he died in 1821. Copenhagen retired to Wellington's country house, Stratfield Saye, in Hampshire. Visitors begged for hairs from his mane and tail as keepsakes. He died in 1836 at the age of 28 and was buried with military honors. Wellington's family set up a stone over his grave. Two very different horses, one small and gray, one tall and red, carried the two men who decided the fate of Europe on a single day.

PICTURE STUDY



Bonaparte Crossing the Grand-Saint-Bernard Pass (Napoleon Crossing the Alps), Jacques-Louis David, 1801
· Oil on canvas · Musée national des châteaux de Malmaison et Bois-Préau, Rueil-Malmaison, France (one of five versions)
Wikimedia Commons · Public domain

In 1800 Napoleon led his army over the Alps into Italy, a few weeks before the Battle of Marengo. Napoleon asked the painter Jacques-Louis David to show him “calm on a fiery horse.” In truth he crossed the snowy pass on a sure-footed mule, led by a local guide. In 1850 another French painter, Paul Delaroche, painted the crossing on the mule.

Look closely

- Look at the horse’s mane, tail and legs. What is the horse doing?
- Look at Napoleon’s face. Does he look worried?
- Find the names carved on the rocks at the bottom. Besides BONAPARTE, whose names are there? (Hannibal and Charlemagne, earlier commanders who led armies over the Alps.)

Talk about it

1. Why do you think Napoleon wanted to be painted on a rearing horse instead of on a mule?
2. Is a painting like this history, or advertising? Explain your answer.

HANDS-ON: MAP: THE FIELD OF WATERLOO

Draw a simple battle map so you can see where Copenhagen and Marengo stood on June 18, 1815.

You will need

- Paper, pencil, ruler
- Blue, red and black colored pencils
- A Waterloo battle map from an atlas or library book to copy from

Steps

1. Draw a road running north to south down the middle of the page. Label the top “to Brussels” and the bottom “to Charleroi.”
2. Near the top third, draw a low ridge across the road and label it “Mont-Saint-Jean ridge: Wellington.” Color it red.
3. Lower down, across the road, draw a line and label it “La Belle Alliance: Napoleon.” Color it blue.
4. Mark three places between the lines: Hougoumont farm (west), La Haye Sainte farm (center, on the road) and Plancenoit village (east, behind the French).
5. Draw black arrows from the east labeled “Prussians, afternoon.” Add a small horse symbol for Copenhagen on the ridge and one for Marengo near La Belle Alliance. Add a compass rose and the date.

Check your work

- My map shows both armies, three farms or villages and the Prussian arrows.
- I placed both horses and labeled the date.
- I used a compass rose with north at the top.

FIELD NOTEBOOK

1. **Comparison chart:** Two columns, Marengo and Copenhagen. Rows: rider, color, height, breeding, years, where he rests today.
2. **Notebook entry:** Write a paragraph: What did Wellington mean by “bottom”? Describe a time when you needed bottom to finish something hard.

Did you know? Marengo’s skeleton has no hooves. After his death, one hoof was made into a silver-topped snuffbox and presented to the officers of the Brigade of Guards. Another became an inkstand. Copenhagen was buried at Stratfield Saye, where his gravestone can still be seen.

Map or diagram. On a map of Europe, find Brussels, Waterloo, Paris and Moscow, and far out in the South Atlantic, the tiny island of St. Helena.

Goes deeper in. History, “Napoleon and the Age of Revolutions,” and Art, “Painting History: David and Delaroche” (coming soon).

For families. Sources: National Army Museum, London (Marengo); Elizabeth Longford, *Wellington: The Years of the Sword*; Philip Henry Stanhope, *Notes of Conversations with*

the Duke of Wellington (the “bottom and endurance” remark). Marengo’s story rests partly on tradition; some historians doubt he was at Waterloo or that the captured horse was the same Marengo, and the stop says so. Heights and ages are approximate. Napoleon’s request to be painted “calm on a fiery horse” is the usual account. Casualties are given only as “tens of thousands,” without detail.

PRACTICE

1. **EASY** On what date was the Battle of Waterloo fought, and in what present-day country?
2. **EASY** Which horse belonged to Napoleon and which to Wellington? Give each horse’s color.
3. **MEDIUM** Copenhagen was foaled in 1808 and died in 1836. How old was he? How old was he at Waterloo?
4. **MEDIUM** Marengo was about 14.1 hands and Copenhagen about 15 hands. Change both to inches. How much taller was Copenhagen?
5. **CHALLENGE** At 14.1 hands, Marengo was under the 14.2-hand pony line, yet he is always called a horse. Why? And why is David’s painting not a reliable record of the Alps crossing?

Make it a game • Dispatch Rider. One player is the general at one end of the yard; another is the commander at the far end. Riders “gallop” written orders (folded slips of paper) between them while others try to tag them. A tagged rider must hand the order to the next rider. Count how many orders get through in three minutes. Talk about why good chargers mattered when orders traveled by horse.

Scripture. “An horse is a vain thing for safety: neither shall he deliver any by his great strength.” (Psalm 33:17, KJV)

Napoleon had fine horses and the greatest army in Europe, but they could not keep his throne. The verse before says “There is no king saved by the multitude of an host.” God rules over the battles of nations.

Practice: answers

1. June 18, 1815, in Belgium.
2. Marengo, a gray, was Napoleon’s; Copenhagen, a chestnut, was Wellington’s.
3. 28 years old at his death; 7 years old at Waterloo (1815 – 1808).
4. Marengo: $14 \times 4 + 1 = 57$ inches. Copenhagen: $15 \times 4 = 60$ inches. Copenhagen was about 3 inches taller.
5. Arabians are a horse breed with a horse’s build, so they are called horses even when small. David’s painting was made to glorify Napoleon; he actually crossed on a mule led by a guide, so the painting is closer to a portrait for show than a record of what happened.

3.4 THE PONY EXPRESS (1860–1861)

OBJECTIVES

- Tell when the Pony Express ran, where it started and ended, and why it ended.
- Explain how the relay of stations, riders and horses carried mail about 1,900 miles in about ten days.
- Draw and label a map of the Pony Express route across eight present-day states.

Warm-up. Imagine you live in California in 1860 and a letter from your grandmother in Missouri takes three or four weeks to arrive. How might you get it to you in ten days, with no trains, cars, telephones or airplanes?

Video slot. Video coming. The Pony Express for students: route, stations, riders and the mochila. Search approved channels (National Park Service, Smithsonian National Postal Museum, Kentucky Horse Park); preview first.

KEY TERMS

Pony Express

A mail service of relay riders on fast horses between St. Joseph, Missouri, and Sacramento, California, from April 1860 to October 1861.

relay station

A stop along the route. At a swing station the rider changed horses; at a home station a fresh rider took over.

mochila

A leather cover (Spanish for “knapsack”) thrown over the saddle, with four locked pockets for the mail (say “mo-CHEE-lah”).

telegraph

A machine that sent messages along a wire as electric clicks in Morse code, almost instantly.

express

Fast, direct delivery of letters or goods.

CORE IDEAS

By 1860 California had been a state for ten years, and its gold and growing cities tied it to the rest of the country. But news crawled. Mail went by ship by way of Panama, or by stagecoach on a long southern route that took more than three weeks. Three freighting partners, William Russell, Alexander Majors and William Waddell, believed they could do better with a straight central route and a chain of fast horses. They called it the **Pony Express**, though most of the animals were full-sized horses: mustangs, Morgans and some Thoroughbreds.

On April 3, 1860, the first riders set out at the same time from **St. Joseph, Missouri**, heading west, and from **Sacramento, California**, heading east. The route ran about 1,900 miles across what are now Missouri, Kansas, Nebraska, Colorado, Wyoming, Utah, Nevada and California: over the plains along the Platte River, through South Pass in the Rockies, past Salt Lake City, across the Great Basin desert and over the Sierra Nevada. The first westbound mail reached Sacramento about ten days later. Crowds cheered and church bells rang.

The secret was the **relay**. There were about 150 to 190 stations along the way. At a **swing station**, every 10 to 15 miles, a rider leaped from a lathered horse to a fresh one in a couple of minutes, carrying only the **mochila**, which slipped over the new saddle. Its four locked pockets held up to about 20 pounds of letters, printed on thin paper to save weight. At a **home station**, every 75 to 100 miles, a new rider took over. The company had about 80 riders and 400 to 500 horses at a time. Riders were young and light, and they rode day and night, in blizzards, desert heat and danger. In 1860 war broke out with the Paiute people in Nevada, and several stations were attacked and burned.

Alexander Majors was a Christian who hated cursing and drunkenness. He gave each rider a small Bible and asked him to sign an oath, before God, not to use profane language, not to drink, not to fight with other employees, and to be honest and faithful to his duties. Postage was costly: at first \$5 for each half ounce, later \$1. The fastest run carried President Lincoln's first inaugural address in March 1861, in about seven days and seventeen hours between the telegraph lines at each end.

The Pony Express was beaten by a wire. On October 24, 1861, the eastern and western **telegraph** lines met in Salt Lake City, and a message could cross the continent in moments. Two days later the Pony Express was ended. It had lasted only about nineteen months and lost a great deal of money. Yet it kept California close to the news in the first months of the Civil War, and it proved the central route could be crossed. Riders covered hundreds of thousands of miles, and it is said only one mochila of mail was ever lost.

PICTURE STUDY



The Coming and Going of the Pony Express, Frederic Remington, 1900 · Oil on canvas · Gilcrease Museum, Tulsa, Oklahoma
Wikimedia Commons · Public domain

Frederic Remington (1861–1909) was an American artist who traveled the West and painted cowboys, cavalry and horses in action. He was born the year the Pony Express ended, so he painted it from research and imagination about forty years later. The title tells you the moment he chose: a rider arriving and a rider leaving.

Look closely

- Find the fresh horse and the tired horse. How can you tell which is which?
- Where is the mochila? Look over the saddle.
- Look at the dust and the horses' legs. How does Remington show speed?

Talk about it

1. Why did the change of horses have to be so quick?
2. Remington was not there in 1860. What could he use to make his painting truthful?

HANDS-ON: MAP: 1,900 MILES IN TEN DAYS

Draw the Pony Express route across the West and mark its main stops.

You will need

- An outline map of the United States, or a large sheet of paper and an atlas
- Colored pencils and a ruler
- The National Park Service Pony Express Trail map (optional)

Steps

1. Lightly color the eight present-day states on the route: Missouri, Kansas, Nebraska, Colorado, Wyoming, Utah, Nevada and California. Label each.
2. Draw and label the Missouri River, the Platte River, the Rocky Mountains, the Great Salt Lake and the Sierra Nevada.
3. Mark these stops with dots and labels: St. Joseph, Marysville, Fort Kearny, Julesburg, Chimney Rock, Fort Laramie, South Pass, Fort Bridger, Salt Lake City, Carson City and Sacramento.
4. Connect the dots with a dashed brown line for the route. Add a horseshoe symbol about every 100 miles for a home station.
5. Add a scale bar, a compass rose and a legend explaining your symbols. Title the map with the dates April 3, 1860 – October 1861.

Check your work

- All eight states and five landforms are labeled.
- At least ten stops are marked and connected.
- My map has a scale bar, compass rose and legend.

FIELD NOTEBOOK

1. **Diagram:** Draw a mochila laid flat from above, with the hole for the saddle horn in the middle, the slit for the cante, and a locked pocket (cantina) at each corner. Label all four.
2. **Notebook entry:** Write a paragraph as if you were a Pony Express rider writing home. Tell about one day's ride, your horses and the oath you signed. Use at least two true facts from the story.

Did you know? Letters were often written on tissue-thin paper to save weight, since every half ounce cost money. Even so, the Pony Express lost money on almost every ride. Its owners hoped to win a large government mail contract, but the telegraph arrived first.

Map or diagram. The Pony Express National Historic Trail is marked today by the National Park Service. Some original stations, such as Hollenberg Station in Kansas, still stand.

Goes deeper in. History, "Westward Expansion," Geography, "The American West," and Small Business & Economics, "Costs, Prices and Profit" (coming soon).

For families. Sources: National Park Service, Pony Express National Historic Trail; Smithsonian National Postal Museum; Alexander Majors, *Seventy Years on the Frontier* (1893), which gives his oath. Station counts (150–190), horse numbers and rider numbers differ among sources and are given as ranges. The famous newspaper ad for "skinny, wiry fellows ... orphans preferred" is probably not genuine and is left out, as are disputed

claims about Buffalo Bill Cody's rides. The Paiute War of 1860 is mentioned plainly without detail. The "only one mochila lost" claim is traditional.

PRACTICE

1. **EASY** What were the two end points of the Pony Express?
2. **EASY** What invention put the Pony Express out of business, and in what month and year?
3. **MEDIUM** At first, postage was \$5 for each half ounce. What would a 2-ounce letter cost?
4. **MEDIUM** A rider rode 75 miles and changed horses about every $12\frac{1}{2}$ miles. How many horses did he ride?
5. **CHALLENGE** The mail went about 1,900 miles in 10 days, day and night. How many miles per day is that? About how many miles per hour, counting all 240 hours?

Make it a game • Relay of the Mochila. Set up "stations" (cones or chairs) around the yard. Make a mochila from a pillowcase with four envelopes inside. Riders run from station to station; at each, the mochila must be passed to the next rider without dropping a letter. Time the whole route, then try to beat your record. Read the letters aloud at the finish.

Scripture. "As cold waters to a thirsty soul, so is good news from a far country."
(Proverbs 25:25, KJV)

To a family in California in 1860, a letter from home was like cold water in the desert. The best news from far away is the gospel, which God sent to us in His Son.

Practice: answers

1. St. Joseph, Missouri, and Sacramento, California.
2. The transcontinental telegraph, completed in October 1861.
3. 2 ounces = 4 half ounces; $4 \times \$5 = \20 .
4. $75 \div 12\frac{1}{2} = 6$ horses.
5. $1,900 \div 10 = 190$ miles per day. $1,900 \div 240 \approx 7.9$, so about 8 miles per hour, around the clock.

3.5 TRAVELLER AND CINCINNATI: LEE’S AND GRANT’S HORSES

OBJECTIVES

- Describe Traveller and Cincinnati: color, size, breeding and how each came to his rider.
- Tell what happened at Appomattox Court House on April 9, 1865, and what Grant decided about the soldiers’ horses.
- Make a labeled comparison diagram and a map of the Virginia places in the story.

Warm-up. If you had to describe your favorite animal so clearly that an artist who had never seen it could draw it, what ten words would you use? General Robert E. Lee once did exactly that for his horse.

Video slot. Video coming. Appomattox Court House surrender, April 1865; Lee’s horse Traveller; Grant’s horse Cincinnati. Search approved channels (National Park Service, American Battlefield Trust, Smithsonian); preview first.

KEY TERMS

Civil War

The war in the United States (1861–1865) between the Union and the eleven Southern states that formed the Confederacy.

Appomattox Court House

A small village in central Virginia where Lee surrendered his army to Grant on April 9, 1865.

terms

The conditions of a surrender: what the defeated soldiers must do and what they are allowed to keep.

parole

A promise by a captured soldier not to fight again, in return for being allowed to go home.

Saddlebred

An American riding breed known for an elegant, comfortable ride. Traveller was of Saddlebred type.

CORE IDEAS

The **Civil War** (1861–1865) was the deadliest war in American history. Eleven Southern states left the Union to form the Confederacy, chiefly to protect slavery. The Union fought to hold the nation together, and by the war’s end it also fought to end slavery, which the Thirteenth Amendment abolished in 1865. The two most famous generals of the war, Robert

E. Lee of the Confederacy and Ulysses S. Grant of the Union, were both fine horsemen, and each had a horse the nation remembered.

Traveller was foaled in 1857 near Blue Sulphur Springs in Greenbrier County, Virginia (now West Virginia). He was gray with a black mane and tail, about 16 hands, of Saddlebred type with Thoroughbred blood. As a colt he was called Jeff Davis, then Greenbrier, and he won ribbons at a county fair. Lee first noticed him in western Virginia in 1861 and bought him in February 1862 for \$200. Lee renamed him Traveller and rode him for the rest of the war. Lee once described him in a letter: a deep chest, short back, strong haunches, small head, broad forehead, delicate ears, quick eye and small feet. He liked his fast, springy walk.

Cincinnati was a big bay, about 17 hands, a son of Lexington, the most famous American racehorse and sire of his day. An admirer in St. Louis gave him to Grant in 1864. Grant had loved horses since his boyhood in Ohio; at West Point in 1843 he set a high-jump record on a horse named York that stood for about twenty-five years. Grant rarely let anyone else ride Cincinnati. One exception was President Abraham Lincoln, who rode him at City Point, Virginia, in the spring of 1865.

On Palm Sunday, April 9, 1865, Lee rode Traveller to the McLean house at **Appomattox Court House**, and Grant arrived on Cincinnati. Lee's army was worn out and hungry. Grant's **terms** were generous: the soldiers would sign a **parole** and go home. Lee mentioned that many of his cavalry and artillery men owned their own horses. Grant agreed that any man who claimed a horse or mule could take it home, because, as he wrote later, most of them were small farmers who would need the animals to plant a spring crop. He also sent food to Lee's starving men. Then Lee mounted Traveller and rode back to his army.

After the war Lee became president of Washington College in Lexington, Virginia, and rode Traveller almost every day; students pulled hairs from his tail as souvenirs. Lee died on October 12, 1870, and Traveller walked behind the hearse in his funeral procession. The next year Traveller stepped on a nail, caught tetanus and died. He is buried near Lee's family crypt on the campus. Grant became President (1869-1877). Cincinnati lived out his days on a friend's farm in Maryland and died in 1878.

PICTURE STUDY



Robert E. Lee on Traveller, Michael Miley (photographer), 1866 · Photograph · Library of Congress and Washington and Lee University collections
Wikimedia Commons · Public domain

Michael Miley was a photographer in Lexington, Virginia, who took many pictures of Lee after the war. In 1866 cameras needed the subject to hold very still, so a horse had to stand quietly for the picture. Compare Traveller with Lee's own description in the story.

Look closely

- Check Lee's description: can you see the deep chest, short back and small head?
- Look at the colors of Traveller's body, mane and tail.
- Look at how Lee sits. Is he stiff or relaxed in the saddle?

Talk about it

1. Why do you think so many people wanted a photograph of Lee with his horse?
2. How is a photograph like this different as a source from a painting like David's Napoleon (Stop C3)?

HANDS-ON: DIAGRAM AND MAP: TWO GENERALS' HORSES

Make a side-by-side height diagram of Traveller and Cincinnati, and a map of the Virginia places in their story.

You will need

- Graph paper, pencil and ruler
- Gray and brown colored pencils

- A map of Virginia from an atlas

Steps

1. On graph paper, let one square equal 4 inches (one hand). Draw a ground line and a tall measuring line marked from 0 to 18 hands.
2. Draw a simple side view of Traveller standing 16 hands at the withers and Cincinnati standing 17 hands. Color Traveller gray with black mane and tail, Cincinnati bay (brown with black legs, mane and tail).
3. Under each horse write: rider, color, height, sire or breeding, years of life.
4. On a second page, draw an outline of Virginia and West Virginia. Mark and label: Greenbrier County, Lexington, Richmond, Petersburg, City Point, Appomattox Court House and, just across the Potomac, Washington, D.C.
5. Draw a small horse symbol at Appomattox Court House and write “April 9, 1865.”

Check your work

- My diagram uses a scale and shows the 1-hand difference in height.
- Each horse has five facts under it.
- My map has seven labeled places and the surrender date.

FIELD NOTEBOOK

1. **Notebook entry:** Write a paragraph explaining why Grant let the Confederate soldiers take their horses and mules home. What does that choice show about how he hoped the country would heal after the war?
2. Copy Isaiah 2:4 and underline the word “plowshares.”

Did you know? Grant was so fond of horses that as a boy he was hired to break and drive other people’s horses. He also owned a small black pony named Jeff Davis, captured on a Mississippi plantation, which he rode when his health made Cincinnati too much horse.

Map or diagram. Appomattox Court House is about 90 miles west of Richmond. The McLean house has been rebuilt and is part of Appomattox Court House National Historical Park.

Goes deeper in. History, “The American Civil War” and “Reconstruction” (coming soon).

For families. Sources: Ulysses S. Grant, *Personal Memoirs* (1885–1886), chapters on Appomattox; Horace Porter, *Campaigning with Grant* (1897), on Cincinnati and Lincoln’s ride; National Park Service, Appomattox Court House; Washington and Lee University. Lee’s description of Traveller comes from an 1860s letter usually dated to after the war; it is paraphrased here. Traveller’s purchase price is usually given as \$200; his breeding as Saddlebred (Gray Eagle stock). The photograph is usually credited to Michael Miley, 1866; check the archive record. The causes of the war are stated plainly, as Confederate leaders themselves stated them, without modern slogans.

PRACTICE

1. **EASY** Which general rode Traveller, and which rode Cincinnati?
2. **EASY** Where and when did Lee surrender to Grant?
3. **MEDIUM** Traveller was foaled in 1857 and died in 1871. How old was he? How old was he when Lee bought him in 1862?
4. **MEDIUM** Cincinnati stood about 17 hands and Traveller about 16 hands. How many inches tall was each, and what is the difference?
5. **CHALLENGE** Why was letting the soldiers keep their horses and mules both kind and wise?

Make it a game · Describe the Horse. One player secretly picks a horse from this trail (or a picture of a horse). Using only words about its body and color, the player describes it the way Lee described Traveller, while the others draw. Compare drawings: whose description was clearest?

Scripture. “And he shall judge among the nations, and shall rebuke many people: and they shall beat their swords into plowshares, and their spears into pruninghooks: nation shall not lift up sword against nation, neither shall they learn war any more.” (Isaiah 2:4, KJV)

At Appomattox, war horses went home to pull plows. It was a small picture of the peace Isaiah foresaw, which will be complete when Christ judges the nations.

Practice: answers

1. Robert E. Lee rode Traveller; Ulysses S. Grant rode Cincinnati.
2. At Appomattox Court House, Virginia, on April 9, 1865.
3. About 14 at his death; about 5 when Lee bought him.
4. Cincinnati 68 inches, Traveller 64 inches; Cincinnati was about 4 inches taller.
5. It was April, planting time. Most of the men were small farmers whose families would go hungry without a crop, so the animals helped them feed their families. It was wise because men treated generously were more likely to go home peacefully and rebuild, helping the reunited country heal instead of staying bitter.

3.6 SERGEANT RECKLESS, THE KOREAN WAR PACKHORSE

OBJECTIVES

- Tell how a small Korean racing mare came to serve with the U.S. Marines.
- Use numbers from the Battle of Outpost Vegas to explain what Reckless did.
- Draw a labeled side-view diagram of her ammunition route.

Warm-up. Lift a backpack loaded with about 24 pounds of books (about as heavy as a large bag of dog food). Now imagine carrying eight of those up a steep hill, over and over, all day. That was the work of one small horse in 1953.

Video slot. Video coming. Sergeant Reckless, Korean War horse of the U.S. Marines; the Reckless statue at the National Museum of the Marine Corps. Search approved channels (National Museum of the Marine Corps, Smithsonian, Kentucky Horse Park); preview first.

KEY TERMS

Korean War

The war (1950–1953) in which South Korea, the United States and other United Nations forces fought against the invasion of North Korea and its Chinese allies.

recoilless rifle

A light cannon carried by soldiers; Marines nicknamed it the “reckless rifle.” Each shell weighed about 24 pounds.

packhorse

A horse that carries loads on its back instead of a rider.

Outpost Vegas

A hilltop position in Korea, fought over by Marines and Chinese forces in March 1953.

Purple Heart

A U.S. military medal given to those wounded in battle.

CORE IDEAS

The **Korean War** began in June 1950, when Communist North Korea invaded South Korea. The United States and other nations sent troops to defend the South. By 1952 the armies faced each other across steep, rocky hills near the middle of the peninsula. The Marines of the Recoilless Rifle Platoon, 5th Marine Regiment, had a problem: their **recoilless rifles** were powerful, but each shell weighed about 24 pounds, and men had to haul them up the hills by hand.

In October 1952 Lieutenant Eric Pedersen went to the racetrack in Seoul with \$250 of his own money. There he met a young Korean named Kim Huk Moon, who owned a small

chestnut mare with a white blaze and three white stockings. He loved her, but he needed money to buy an artificial leg for his sister, who had been badly hurt by a land mine. He sold her to the Marines. They named her **Reckless**, after the “reckless rifle.”

Gunnery Sergeant Joseph Latham and the other Marines trained her. She learned to step over barbed wire, lie down when shells came near, and duck into a bunker. After being led along a route only once or twice, she could make the trip alone. She was famous for her appetite: scrambled eggs, pancakes, buttered bread, Coca-Cola and, the Marines claimed, almost anything left on a table, including a hat. On cold nights she sometimes slept in the Marines’ tent beside the stove.

Her great test came at the Battle of **Outpost Vegas**, March 26–28, 1953. On a single day Reckless made **51 trips** from the supply point up to the firing positions, mostly alone. She carried **386 shells**, more than **9,000 pounds** in all, and walked over **35 miles** through open rice paddies and up steep slopes under enemy fire. She was wounded twice, once above her left eye, yet she kept going. On the way down she often carried wounded Marines to safety.

The Marines made her a corporal and then, in 1954, a sergeant. That year she sailed to America and lived at Camp Pendleton, California, where she had four foals. In 1959 the Commandant of the Marine Corps promoted her to staff sergeant. She earned two **Purple Hearts** and other decorations, and she died in 1968, about twenty years old. In 2013 a bronze statue of her was dedicated at the National Museum of the Marine Corps in Quantico, Virginia, and in 2016 she received Britain’s Dickin Medal for animals’ bravery in war. A horse bought for \$250 to help a boy’s sister became one of the most honored animals in American history.

PICTURE STUDY



Reckless with Her Marines in Korea, U.S. Marine Corps photographer, c. 1953 · Black-and-white photograph
· U.S. Marine Corps History Division and the National Archives
Wikimedia Commons · CC BY 2.0

Photographs taken by Marines on duty are works of the U.S. government and belong to the public. These pictures show Reckless as she really was: a small, shaggy, ordinary-looking mare, standing with the men who trusted her.

Look closely

- Compare Reckless's size with the Marines beside her. Is she horse-sized or pony-sized?
- Find her blaze and her pack saddle.
- Look at the land. What would make it hard to climb with a load?

Talk about it

1. Why do you think the Marines treated Reckless as one of their own?
2. What can a photograph tell you that a painting cannot?

HANDS-ON: DIAGRAM: RECKLESS'S AMMUNITION RUN

Draw a side view (cross-section) of the ground Reckless crossed, and use numbers to show her work.

You will need

- A long sheet of paper turned sideways
- Pencil, ruler and colored pencils

Steps

1. Draw the ground from the side: a flat valley on the left, then a steep hill rising to the right. Color the valley green with little lines for rice paddies.
2. Label the left end “ammunition supply point” and the hilltop “recoilless rifle firing position.”
3. Draw a dotted path from bottom to top with an up-arrow (loaded) and a second path with a down-arrow (empty, or carrying a wounded Marine).
4. Draw a small horse with a pack frame on the path. Label: pack saddle, shells, blaze.
5. In a box, write the numbers: 51 trips, 386 shells, about 24 pounds per shell, over 9,000 pounds, over 35 miles, one day. Add a tally chart with 51 marks.

Check your work

- My diagram shows the valley, hill, both ends and both directions.
- The horse and pack are labeled.
- The number box has all six facts.

FIELD NOTEBOOK

1. **Notebook entry:** Write a paragraph about Reckless. Why was she valuable to the Marines? Include at least three numbers from the story, and end with what her life shows about faithfulness in hard work.

Did you know? Reckless’s Korean racing name is often given as Ah Chim Hai, “Flame of the Morning.” Three of her foals, all colts, were named Fearless, Dauntless and Chesty (after the famous Marine general Lewis “Chesty” Puller). Her fourth foal, a filly, died young.

Map or diagram. On a map of Korea, find Seoul, the 38th parallel and the area north of Seoul near Panmunjom where the Marines fought in 1952–1953. The armistice of July 27, 1953, ended the fighting near that line.

Goes deeper in. History, “The Korean War and the Cold War,” and Gardening & Animals, “Working Animals” (coming soon).

For families. Sources: Andrew Geer, *Reckless: Pride of the Marines* (1955), by a Marine officer who knew her; Robin Hutton, *Sgt. Reckless: America’s War Horse* (2014); National Museum of the Marine Corps. The Outpost Vegas figures (51 trips, 386 rounds, over 9,000 pounds, over 35 miles) are the standard Marine Corps account. Kim Huk Moon’s sister’s injury and the battle are told plainly without detail. Dates of her promotions differ slightly among sources.

PRACTICE

1. **EASY** How much did Lieutenant Pedersen pay for Reckless, and why did her owner sell her?
2. **EASY** Where did the name Reckless come from?
3. **MEDIUM** Reckless carried 386 shells in 51 trips. About how many shells per trip is that?
4. **MEDIUM** If each shell weighed 24 pounds, how much did 8 shells weigh? What did 386 shells weigh?
5. **CHALLENGE** She walked over 35 miles in 51 round trips. About how long was each round trip? Why might this short distance still have been so hard?

Make it a game • Packhorse Relay. Fill bags with beanbags or socks (each one a “shell”). Set a supply point at the bottom of a slope or stairs and a firing position at the top. Teams carry shells up one at a time while a timer runs for three minutes. Count trips and shells, then work out shells per trip, like Reckless’s numbers.

Scripture. “Bear ye one another's burdens, and so fulfil the law of Christ.” (Galatians 6:2, KJV)

Reckless literally carried her Marines’ burdens, up the hill with shells and down the hill with the wounded. Christ calls His people to carry one another’s loads in love.

Practice: answers

1. \$250. Kim Huk Moon needed the money to buy an artificial leg for his sister.
2. From the Marines’ nickname for the recoilless rifle, the “reckless rifle,” whose shells she carried.
3. $386 \div 51 \approx 7.6$, so about 7 or 8 shells per trip.
4. $8 \times 24 = 192$ pounds. $386 \times 24 = 9,264$ pounds, which matches “more than 9,000 pounds.”
5. $35 \div 51 \approx 0.7$ mile per round trip. It was hard because she climbed steep hills, crossed muddy rice paddies, carried about 190 pounds uphill each time, was under fire, and did it 51 times in one day.

3.7 SEABISCUIT (1938)

OBJECTIVES

- Tell how Seabiscuit, a small and overlooked horse, became a champion with the help of Charles Howard, Tom Smith and Red Pollard.
- Retell the 1938 match race against War Admiral, using the track's parts and the key numbers.
- Draw a labeled diagram of the Pimlico race and work out the horses' speed.

Warm-up. Think of a time when someone underestimated you, or you underestimated someone else. What changed their mind? In the hard years of the 1930s, millions of Americans cheered for a short, knobby-kneed horse that nobody had expected much from.

Video slot. Video coming. Seabiscuit and War Admiral match race, Pimlico, November 1, 1938 (newsreel footage); the Great Depression for students. Search approved channels (Kentucky Horse Park, National Museum of Racing, Smithsonian); preview first.

KEY TERMS

Thoroughbred

The breed of horse bred for racing, descended from three Arabian-type stallions brought to England around 1700.

jockey

A rider of racehorses, usually small and light.

match race

A race between only two horses.

furlong

A distance of one-eighth of a mile (220 yards), used in horse racing.

length

The length of a horse, about 8 feet, used to measure how far apart horses finish.

CORE IDEAS

In the 1930s the United States was in the **Great Depression**. Banks had failed, and in the worst year about one worker in four had no job. People longed for a hero who had come from nowhere. They found one in a racehorse. **Seabiscuit** was foaled in 1933 in Kentucky, a grandson of the great Man o' War. But he was small, about 15.2 hands, with knobby knees and an odd, flailing gallop. He was lazy in training and lost most of his early races. As a two-year-old he raced an exhausting 35 times.

In 1936 a San Francisco automobile dealer named **Charles Howard** bought him for \$8,000 on the advice of his trainer, **Tom Smith**, a quiet old horseman who had broken wild

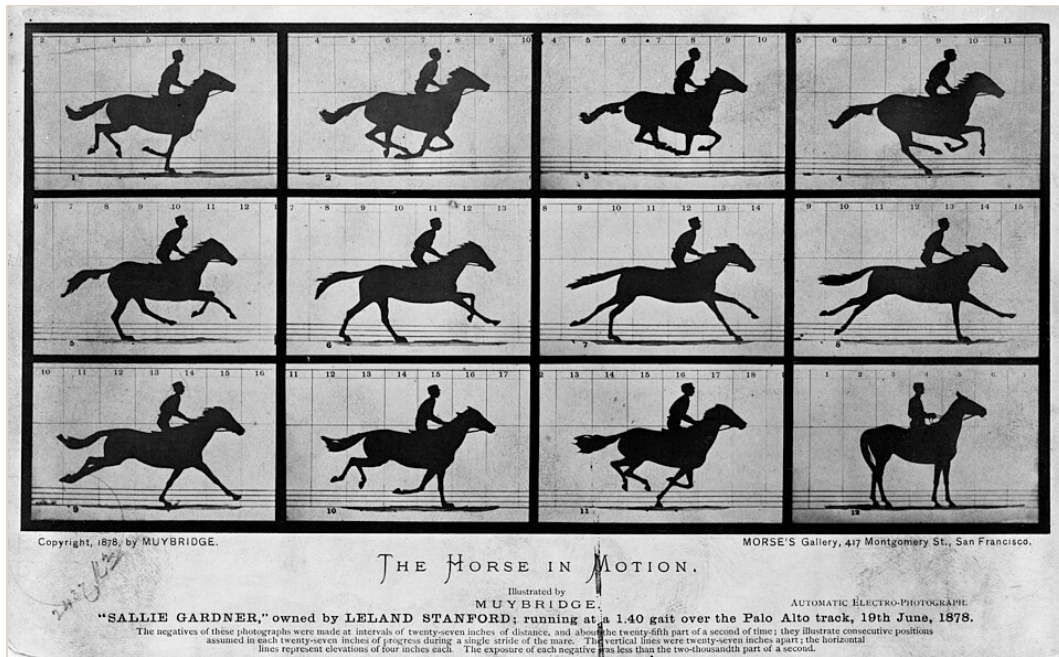
mustangs in the West. Smith saw a nervous, overworked horse who needed rest and friends. He gave Seabiscuit a calm stablemate, a horse named Pumpkin, and let him sleep as long as he liked. The jockey was **Red Pollard**, a tough young Canadian who was secretly blind in one eye. Horse and men all were cast-offs, and together they began to win. By 1937 Seabiscuit was the leading money-winning horse in America.

In the East, fans praised **War Admiral**, a son of Man o' War (which made him Seabiscuit's half-uncle). He was fast, proud and dark brown, and in 1937 he had won the Triple Crown. Which was the better horse? After months of argument, the owners agreed to a **match race** at Pimlico in Baltimore on **November 1, 1938**. Pollard had badly broken his leg earlier that year, so the cool-headed jockey **George Woolf**, nicknamed "the Iceman," rode instead. Pollard told him a secret: let War Admiral come alongside, let Seabiscuit look him in the eye, and then ask him to run.

The race was 1 3/16 miles and began with a walk-up start and a ringing bell instead of a starting gate. War Admiral was famous for fast starts, so Tom Smith had secretly trained Seabiscuit to burst away at the sound of a bell. At the bell Seabiscuit took the lead. Down the backstretch War Admiral drew level, and the two ran head to head. Woolf let Seabiscuit look at his rival, then asked. Seabiscuit pulled away and won by four lengths, in 1:56 3/5, a track record. About 40,000 people were at the track, and tens of millions more listened on the radio. Seabiscuit was named Horse of the Year for 1938.

Then both horse and jockey were hurt again: Seabiscuit tore a ligament in 1939, and Pollard was still healing. They recovered slowly together on Howard's ranch in California. In March 1940, with Pollard riding, Seabiscuit won the Santa Anita Handicap, a race he had twice lost by a nose. He retired having won 33 of his 89 races, and he died in 1947.

PICTURE STUDY



The Horse in Motion, Eadweard Muybridge, 1878 · Series of photographs (printed on cards) · Library of Congress, Washington, D.C., and other collections
Wikimedia Commons · Public domain

In 1878, at Leland Stanford's farm in Palo Alto, California, Eadweard Muybridge lined up a row of cameras with tripwires along a racetrack. A mare named Sallie Gardner galloped past, and the cameras took pictures a fraction of a second apart. For the first time people could see exactly how a racehorse's legs move.

Look closely

- Find the frame where all four hooves are off the ground. Where are the legs: stretched out or tucked under?
- Follow one leg from frame to frame. What does it do?
- Look at the jockey. How does his position help the horse?

Talk about it

1. Painters before 1878 often showed galloping horses with legs stretched out front and back like a rocking horse. What did Muybridge prove?
2. How might Tom Smith have used this kind of knowledge to train a horse?

HANDS-ON: DIAGRAM: THE MATCH RACE AT PIMLICO

Draw the race of November 1, 1938, on a diagram of the track.

You will need

- Paper, pencil, ruler

- Two colors: one for Seabiscuit, one for War Admiral

Steps

1. Draw a long oval for the one-mile Pimlico track. Label the two straight sides “homestretch” (in front of the grandstand) and “backstretch,” and the curves “first turn,” “clubhouse turn” and “far turn.” Draw the grandstand along the homestretch.
2. Mark the start and the finish line. The race was $1 \frac{3}{16}$ miles: a little more than one full lap. Write “ $1 \frac{3}{16}$ miles = $9 \frac{1}{2}$ furlongs.”
3. Draw Seabiscuit’s path in his color, starting with a lead at the bell. Add a note: “bell start.”
4. On the backstretch, draw War Admiral catching up in his color and label it “side by side.”
5. Near the finish, draw Seabiscuit four lengths ahead and write “won by 4 lengths, 1:56 $\frac{3}{5}$, track record.”

Check your work

- My oval has the stretches, turns, grandstand, start and finish.
- Both horses’ paths are colored and labeled.
- I wrote the distance, margin and time.

FIELD NOTEBOOK

1. **Notebook entry:** Write a paragraph. Seabiscuit, Tom Smith and Red Pollard had all been overlooked. Why do you think people in the Depression loved them? What did Smith see in Seabiscuit that others missed?

Did you know? Seabiscuit’s name comes from his father, Hard Tack: hardtack and sea biscuit are both names for the hard crackers sailors ate on long voyages. Many people claimed the match race had the largest radio audience of its time; one common estimate is 40 million listeners.

Map or diagram. On a U.S. map, find Paris, Kentucky (Claiborne Farm, where Seabiscuit was foaled), Baltimore (Pimlico), Arcadia, California (Santa Anita) and Willits, California (Ridgewood Ranch, where he is buried).

Goes deeper in. History, “The Great Depression,” and Arithmetic, “Fractions, Rates and Speed” (coming soon).

For families. Sources: National Museum of Racing and Hall of Fame; Laura Hillenbrand, *Seabiscuit: An American Legend* (2001), summarized here, not quoted; best for older readers and parents. The 2003 film is rated PG-13 for language and some sensual content; preview it. Horse racing involves wagering; this stop tells the story of the horses and men and leaves that out. The radio audience figure is a widely repeated estimate. Pollard’s blind eye is usually given as the right.

PRACTICE

1. **EASY** Name Seabiscuit's owner, trainer and usual jockey.
2. **EASY** Where and when did Seabiscuit race War Admiral?
3. **MEDIUM** There are 8 furlongs in a mile. How many furlongs is $1 \frac{3}{16}$ miles?
4. **MEDIUM** Seabiscuit won by four lengths. If a length is about 8 feet, how far ahead was he? Seabiscuit won 33 of his 89 races; how many did he not win?
5. **CHALLENGE** Seabiscuit ran $1 \frac{3}{16}$ miles (1.1875 miles) in $1:56 \frac{3}{5}$ (116.6 seconds). About how fast was that in miles per hour? (Hint: miles $\div$ seconds $\times$ 3,600.)

Make it a game • Bell Start. Two runners stand at a line. The caller rings a bell (or taps a glass) at an unexpected moment; the first runner to react and reach a cone wins the round. Then try Tom Smith's secret: practice reacting to the bell three times before the real race. Does practice make a faster start?

Scripture. "I returned, and saw under the sun, that the race is not to the swift, nor the battle to the strong, neither yet bread to the wise, nor yet riches to men of understanding, nor yet favour to men of skill; but time and chance happeneth to them all." (Ecclesiastes 9:11, KJV)

No one expected the small, knobby-kneed horse to beat a Triple Crown winner. Solomon reminds us that success is never simply in our own power; God rules over every race.

Practice: answers

1. Owner Charles Howard, trainer Tom Smith, jockey Red Pollard.
2. Pimlico, in Baltimore, Maryland, on November 1, 1938.
3. $8 + (3/16 \times 8) = 8 + 1 \frac{1}{2} = 9 \frac{1}{2}$ furlongs.
4. $4 \times 8 =$ about 32 feet ahead. $89 - 33 = 56$ races not won.
5. $1.1875 \div 116.6 \times 3,600 \approx 36.7$, so about 37 miles per hour.

3.8 SECRETARIAT'S BELMONT (1973)

OBJECTIVES

- Name the three races of the Triple Crown, with their tracks and distances.
- Retell Secretariat's 1973 Belmont Stakes and explain why it is still called the greatest race ever run.
- Make a scale diagram showing what "31 lengths" looks like, and calculate Secretariat's speed.

Warm-up. Measure 8 feet on the floor with a tape measure. That is about one horse length. Now imagine 31 of them in a row. That is how far ahead one horse finished in the most famous race in American history.

Video slot. Video coming. Secretariat, 1973 Belmont Stakes (original CBS race call); the Triple Crown explained. Search approved channels (Kentucky Horse Park, National Museum of Racing, Smithsonian); preview first.

KEY TERMS

Triple Crown

Winning all three great American races for three-year-olds in one spring: the Kentucky Derby, the Preakness Stakes and the Belmont Stakes.

Belmont Stakes

The third and longest Triple Crown race, 1 1/2 miles, run at Belmont Park near New York City.

record

The best time ever run at a certain distance. A track record is the best at one track; a world record is the best anywhere.

stride

The distance a horse covers in one full cycle of its legs at a gallop.

conformation

The shape and build of a horse's body, which affects how well it can move.

CORE IDEAS

The **Triple Crown** is three races in about five weeks, open only to three-year-olds: the **Kentucky Derby** (1 1/4 miles, Churchill Downs, Louisville), the **Preakness Stakes** (1 3/16 miles, Pimlico, Baltimore) and the **Belmont Stakes** (1 1/2 miles, Belmont Park, New York). Winning all three is so hard that after Citation did it in 1948, twenty-five years passed without another winner.

Secretariat was foaled on March 30, 1970, at The Meadow, a farm in Caroline County, Virginia. He was a chestnut with three white socks and a star and stripe on his face, so big and red that his grooms called him “Big Red.” He stood about 16.2 hands and had near-perfect **conformation**. His owner was Penny Chenery, who had taken over her ailing father’s farm; his trainer was Lucien Laurin, and his jockey was Ron Turcotte from New Brunswick, Canada. As a two-year-old in 1972 he was named Horse of the Year.

In 1973 he won the Kentucky Derby on May 5 in 1:59 2/5, a record that still stands. He ran each quarter mile faster than the one before. Two weeks later, at the Preakness, he went from last to first on the first turn and won easily. Only the Belmont was left, the longest race of all. The week before, he appeared on the covers of *Time*, *Newsweek* and *Sports Illustrated*.

On **June 9, 1973**, nearly 70,000 people filled Belmont Park. Only four horses dared to run against him. His great rival Sham went to the front with him, and the two ran side by side, very fast, for three-quarters of a mile. Many horsemen thought such a pace would wear both of them out. Instead Sham faded, and Secretariat kept going faster. The television announcer cried that he was “moving like a tremendous machine.” Turcotte never used his whip. Near the finish he turned and looked back for the other horses, and they were far behind. Secretariat won by **31 lengths** in **2:24 flat**, beating the old Belmont record by more than two and a half seconds. It is still the world **record** for 1 1/2 miles on dirt.

Secretariat raced until the end of 1973, winning 16 of his 21 races, and then retired to Claiborne Farm in Kentucky. He died there on October 4, 1989, at nineteen. The veterinarian who examined him estimated that his heart weighed about 22 pounds, more than twice the size of an average horse’s heart. Strong heart, long **stride**, perfect build and a will to run: all of it was given, not earned. Secretariat’s Belmont is a picture of how splendid a creature God can make.

PICTURE STUDY



Whistlejacket, George Stubbs, c. 1762 · Oil on canvas · The National Gallery, London
Wikimedia Commons · Public domain

George Stubbs (1724–1806) was an English painter who spent eighteen months studying horse anatomy, drawing every muscle and bone. Whistlejacket was a famous chestnut racehorse of Arabian descent owned by the Marquess of Rockingham. Stubbs painted him life-size, about 9 1/2 feet tall, with nothing in the background at all. Like Secretariat, he was a chestnut whose beauty people still admire.

Look closely

- Look at the muscles of the neck, shoulders and hindquarters. How did Stubbs's study of anatomy help?
- Why do you think there is no background or rider?
- Find the light on the horse's coat. Where does it shine brightest?

Talk about it

1. Compare Whistlejacket's build with the photographs of Secretariat you can find in a library book. What is alike?
2. This painting is nearly life-size. How would it feel to stand in front of it?

HANDS-ON: SCALE DIAGRAM: WHAT 31 LENGTHS LOOKS LIKE

Draw the finish of the 1973 Belmont to scale, and map the Triple Crown.

You will need

- A long strip of paper (tape two sheets end to end) and a ruler

- Colored pencils
- An outline map of the eastern United States

Steps

1. Use the scale 1 inch = 20 feet. One horse length (about 8 feet) is then 0.4 inch, a little less than half an inch.
2. $31 \text{ lengths} \times 8 \text{ feet} = 248 \text{ feet}$. At your scale that is $248 \div 20 = 12.4$ inches. Draw a finish line, then measure 12.4 inches back and mark Secretariat crossing the line and the second horse (Twice a Prince) 12.4 inches behind.
3. Label the diagram: "Belmont Stakes, June 9, 1973. Scale: 1 inch = 20 feet. Margin: 31 lengths, about 248 feet."
4. On the map, mark and label Louisville, Kentucky; Baltimore, Maryland; and Elmont, New York (Belmont Park). Beside each, write the race, its distance and Secretariat's 1973 date (May 5, May 19, June 9).
5. Draw arrows connecting the three in order and title the map "The Triple Crown, 1973."

Check your work

- My scale diagram shows the scale, the 12.4-inch gap and labels.
- My map has all three cities, races, distances and dates.
- I showed my arithmetic.

FIELD NOTEBOOK

1. **Notebook entry:** Write a paragraph comparing Seabiscuit (Stop C7) and Secretariat. One was an overlooked underdog, the other a gifted champion from the start. What did each need besides speed? Which story do you find more inspiring, and why?

Did you know? Secretariat ran each quarter mile of the 1973 Kentucky Derby faster than the one before, something almost no racehorse does. His Preakness time of 1:53 was officially accepted as a record only in 2012, after experts studied the old films. After 1973, the next Triple Crown winners were Seattle Slew (1977) and Affirmed (1978).

Goes deeper in. Life Science, "The Heart and Circulation," and Arithmetic, "Speed, Distance and Time" (coming soon).

For families. Sources: National Museum of Racing and Hall of Fame; Secretariat.com (the Chenery family's official site); William Nack, *Secretariat: The Making of a Champion* (1975). The 22-pound heart is an estimate by Dr. Thomas Swerczek at the 1989 necropsy; it was not weighed. Attendance is given as "nearly 70,000" (about 69,000 is the usual figure). The announcer was Chic Anderson of CBS. Horse racing involves wagering; this stop leaves that out. Photographs of Secretariat are under copyright, so the picture study is Stubbs's *Whistlejacket*; Whistlejacket's exact pedigree is given only as "of Arabian descent."

PRACTICE

1. **EASY** Name the three Triple Crown races in order.
2. **EASY** By how many lengths did Secretariat win the 1973 Belmont, and what was his time?
3. **MEDIUM** Citation won the Triple Crown in 1948 and Secretariat in 1973. How many years passed between them?
4. **MEDIUM** Secretariat won 16 of 21 races. What fraction is that? Is it more or less than three-quarters?
5. **CHALLENGE** Secretariat ran 1 1/2 miles in 2 minutes 24 seconds. How many seconds is that? What was his average speed in miles per hour?

Make it a game · Thirty-One Lengths. Outdoors, pace off 31 “lengths” using a rope or tape cut to 8 feet. One player stands at the finish as Secretariat, another 248 feet back as the next horse. Then each player guesses how far 10, 20 or 31 lengths is by eye, and checks with the rope. Who is the best judge of distance?

Scripture. “He delighteth not in the strength of the horse: he taketh not pleasure in the legs of a man. The LORD taketh pleasure in them that fear him, in those that hope in his mercy.” (Psalm 147:10-11, KJV)

God made Secretariat’s strength, and we may marvel at it. But what pleases God most is not speed or power; it is a heart that fears Him and hopes in His mercy.

Practice: answers

1. The Kentucky Derby, the Preakness Stakes and the Belmont Stakes.
2. 31 lengths, in 2:24 flat.
3. $1973 - 1948 = 25$ years.
4. $16/21$. Three-quarters of 21 is $15 \frac{3}{4}$, so 16 wins is a little more than three-quarters.
5. $2 \times 60 + 24 = 144$ seconds. $1.5 \div 144 \times 3,600 = 37.5$ miles per hour.

TRAIL 3 BADGE QUIZ

The badge quiz is optional. The student answers in writing, alone, then checks with a parent. Four right out of five earns the first badge; four right out of six earns the second. Badges and the certificate are earned by doing the stops, not by scores.

Badge quiz 1 (Stops 1–5)

1. What frightened Bucephalus, and how did young Alexander calm him?
2. Which book of the Bible describes the war horse that “mocketh at fear,” and who rides the white horse of Revelation 19:11?
3. Name the horses ridden by Napoleon and Wellington, and the date of Waterloo.
4. What was a mochila, and what ended the Pony Express?
5. At Appomattox, what did Grant allow Confederate soldiers who owned horses or mules to do, and why?

Badge quiz 2 (Stops 6–8)

6. At Outpost Vegas, how many trips did Reckless make in one day, and how many shells did she carry?
7. Which horse did Seabiscuit beat in the 1938 match race, and by how much?
8. How did Tom Smith prepare Seabiscuit for the bell start?
9. Name the three Triple Crown races. By how many lengths did Secretariat win the 1973 Belmont?
10. Secretariat ran 1 1/2 miles in 144 seconds. What was his average speed in miles per hour?
11. Put in order, earliest first: Secretariat’s Belmont, the Pony Express begins, Bucephalus is tamed, Waterloo, Reckless at Outpost Vegas.

TRAIL CERTIFICATE: MY FAMOUS HORSES TIMELINE AND TRAIL C CERTIFICATE

Make a timeline, on a long strip of paper or across notebook pages, from 344 B.C. to A.D. 1973. Place each of the eight stops on it with the horse’s name, rider or owner, date, place and a small drawing.

Add your best map or diagram from the trail, and your best notebook entry, revised and copied neatly.

Finish with a paragraph: Which horse from history would you most like to have known, and what does its story teach? When the timeline is done, a parent signs the Trail C certificate.

- **Accuracy:** Names, dates, places and numbers on the timeline are correct and in order, with B.C. and A.D. handled properly.
- **Maps and diagrams:** Maps and diagrams are neat, labeled, and include a title, compass rose or scale where needed.
- **Writing:** Notebook entries are complete paragraphs with a clear main idea and true supporting facts.

- **Understanding:** The student can explain why each horse mattered and connect at least one story to Scripture.

Answer key

1. His own shadow. Alexander turned his head toward the sun so the shadow fell behind him, then stroked him and mounted gently.
2. Job (chapter 39). The rider is called Faithful and True; He is Jesus Christ.
3. Marengo (Napoleon) and Copenhagen (Wellington); June 18, 1815.
4. A leather cover with four locked mail pockets that slipped over the saddle. The transcontinental telegraph, completed in October 1861.
5. Take them home, so they could plant spring crops on their small farms.
6. 51 trips; 386 shells (more than 9,000 pounds).
7. War Admiral, by four lengths.
8. He secretly trained him to burst away at the sound of a bell, so he would get the lead from War Admiral.
9. Kentucky Derby, Preakness Stakes, Belmont Stakes; 31 lengths.
10. $1.5 \div 144 \times 3,600 = 37.5$ miles per hour.
11. Bucephalus is tamed (c. 344 B.C.), Waterloo (1815), the Pony Express begins (1860), Reckless at Outpost Vegas (1953), Secretariat's Belmont (1973).

HORSES TRAIL D: HORSES IN GREAT STORIES

The fourth trail of the Horses track reads the great horse books and the true stories behind them: Anna Sewell and why she wrote *Black Beauty* (1877); Ginger, Merrylegs and the cruel bearing rein; what Scripture teaches about kindness to animals (Proverbs 12:10); Marguerite Henry's *Misty of Chincoteague* (1947) and the real Pony Penning; *King of the Wind* and the Godolphin Arabian; Walter Farley's *The Black Stallion* (1941); and, to finish, a horse story of your own.

This is the  **Ranger** level, for ages 10 to 13. The student reads each stop alone, then does a map or diagram (maps of Norfolk, Chincoteague and Sham's journey; a harness diagram; a pony-swim timeline; a family tree; a story mountain) and writes a one-paragraph Field Notebook entry. Reading the books themselves alongside the trail is encouraged but not required; *Black Beauty* is free online, and the others are in most libraries. Every stop stands by itself.

Five stops earn the **Horse Ranger badge, part 1**; eight stops earn part 2 and the **Trail D certificate**. The finished horse storybook from Stop D8 is the trail's portfolio piece.

BEFORE YOU BEGIN

- Read a chapter-book page of about 500 words alone and retell it in order.
- Write a paragraph of five or more sentences with a main idea and supporting details.

MASTERY CHECKLIST

- ☐ I can tell why Anna Sewell wrote *Black Beauty* and explain what the bearing rein was.
- ☐ I can quote Proverbs 12:10 and name a biblical law that protects working animals.
- ☐ I can describe Pony Penning week and why the herd is kept at about 150 ponies.
- ☐ I can separate fact from legend in the story of the Godolphin Arabian.
- ☐ I have planned, written and illustrated my own horse story using a setting map and a storyboard.

OPTIONAL BOOKS AND RESOURCES

- **Anna Sewell, *Black Beauty* (Project Gutenberg)**
(<https://www.gutenberg.org/ebooks/271>): The full public-domain text, free to read online or print, for Stops D1–D3.
- **Museum of Chincoteague Island** (<https://chincoteaguemuseum.com>): Home of the preserved Misty and Stormy; history of the island and Pony Penning for Stops D4–D5.
- **Chincoteague National Wildlife Refuge (U.S. Fish and Wildlife Service)**
(<https://www.fws.gov/refuge/chincoteague>): Facts, maps and photos of the Assateague ponies and the refuge, for Stop D5.

- **Library of Congress: Muybridge, *The Horse in Motion*** (<https://www.loc.gov>): Search “Horse in Motion Muybridge” for the 1878 photographs used in Stop D7.
- **Marguerite Henry, *Misty of Chincoteague* and *King of the Wind*; Walter Farley, *The Black Stallion*** (<https://www.worldcat.org>): Find these at your library. They are in copyright, so the trail summarizes them; reading them is the best companion to the stops.

4.1 ANNA SEWELL AND WHY SHE WROTE *BLACK BEAUTY*

OBJECTIVES

- Tell the main facts of Anna Sewell's life (1820–1878) and the injury that made horses her daily helpers.
- Explain the purpose Anna Sewell gave for writing *Black Beauty* (1877).
- Draw a labelled map of the places in her life in eastern and southern England.

Warm-up. Think of an animal you know well. If it could write the story of its own life, what would it want people to understand? Write one sentence in its voice: "The first thing I want you to know about me is ..."

Video slot. Video coming. Anna Sewell, author of *Black Beauty*: her life in Norfolk and why she wrote the book. Search approved channels (Norfolk Museums, BBC Teach, Kentucky Horse Park, a library or literature channel); preview first.

KEY TERMS

autobiography

The story of a life told by the one who lived it. *Black Beauty* is a pretend autobiography: a horse tells his own story.

Quaker

A member of the Religious Society of Friends, a Christian group known for plain living, honesty and works of mercy. Anna Sewell was raised a Quaker.

invalid

A person who is weak or disabled by illness or injury for a long time (say "IN-va-lid").

pony and trap

A small two-wheeled cart pulled by one pony or horse; a common way for families to get about before motor cars.

purpose

The reason a writer writes; what the writer hopes the book will do in readers' hearts and lives.

CORE IDEAS

Anna Sewell was born on 30 March 1820 in Great Yarmouth, a fishing port on the coast of Norfolk in eastern England. Her parents, Isaac and Mary Sewell, were Quakers who taught their children to be truthful, thrifty and kind. Her mother, Mary Wright Sewell, became a well-known writer of moral verse for children, and she taught Anna at home for many years. The family moved often, living in London, in Sussex near Brighton, and later back in Norfolk.

When Anna was about 14, she slipped while running home from school in the rain and badly hurt both ankles. The injury was not treated well, and she was never able to walk far again. For the rest of her life she depended on horses to go anywhere. She drove a **pony and trap** herself, often taking her father to and from the railway station. Because she could not walk beside a horse or ride off on a whim, she watched horses closely: how they were harnessed, how drivers spoke to them, and how they suffered when men were careless or cruel.

In 1867 the Sewells settled at Old Catton, a village just north of Norwich. Anna was now an **invalid**, often in bed for long stretches. Around 1871 she began writing a book in the voice of a horse. At first she wrote in pencil on slips of paper; when she grew too weak, she spoke the words and her mother wrote them down. The work took about six years. In her own words, the book's "special aim" was "to induce kindness, sympathy, and an understanding treatment of horses."

Anna sold the book to Jarrold and Sons, a Norwich publisher, for a single payment of £40. It came out on 24 November 1877 with the long title *Black Beauty: His Grooms and Companions. The Autobiography of a Horse*. Anna lived just long enough to hear that readers loved it. She died on 25 April 1878, only five months later, and was buried in the Quaker burial ground at Lamas, Norfolk.

The book's great idea was to let the horse speak. A reader cannot shrug off cruelty when the one being hurt says "I." In 1890 George Angell, an American who led the Massachusetts Society for the Prevention of Cruelty to Animals, printed a cheap edition and gave copies to drivers, stable hands and schoolchildren; he called it "the *Uncle Tom's Cabin* of the horse." *Black Beauty* has been translated into many languages and has sold tens of millions of copies. One woman who could barely walk changed how the world treated the animals that carried it.

PICTURE STUDY



The Horse Fair, Rosa Bonheur, 1852-1855 · Oil on canvas · The Metropolitan Museum of Art, New York
Wikimedia Commons · Public domain

Rosa Bonheur painted the working horses of Paris at the market where they were bought and sold. In 1855-1856 the painting was shown in Britain, and Queen Victoria asked to see it privately at Windsor Castle. These are the same kind of strong working horses that pulled carts and carriages in Anna Sewell's England.

Look closely

- Find a horse whose head is pulled high or sharply sideways. How does it look?
- Find a groom who seems calm with his horse, and one who seems rough. What tells you?
- Notice the size of these horses next to the men. What jobs might they do?

Talk about it

1. If one of these horses could tell its own story, what might it say about the men handling it?
2. Anna Sewell watched horses as closely as Rosa Bonheur did. Why does close watching make a writer or painter better?

HANDS-ON: MAP OF ANNA SEWELL'S ENGLAND

Make a labelled map of the places in Anna Sewell's life, with a short caption at each place.

You will need

- An atlas or an online map of England

- A sheet of paper and a pencil
- Colored pencils and a fine black pen

Steps

1. Trace or sketch the outline of southern and eastern England. Add the North Sea on the east and the English Channel on the south.
2. Mark and label with dots: Great Yarmouth, Norwich, Old Catton (just north of Norwich), London and Brighton. Add the county name Norfolk.
3. Next to Great Yarmouth write “Born 30 March 1820.” Next to Old Catton write “Wrote *Black Beauty*, about 1871–1877.” Next to Norwich write “Jarrold and Sons published it, 24 November 1877.”
4. Draw a small horse-and-trap symbol beside Old Catton and add a key (legend) that explains your symbols.
5. Add a compass rose and a title: “Anna Sewell’s England.”

Check your work

- My map shows at least five labelled places and the sea.
- Three places have a date caption.
- My map has a key, a compass rose and a title.

FIELD NOTEBOOK

1. **Field Notebook, Trail D, page 1.** Glue in or copy your map of Anna Sewell’s England.
2. Write a paragraph (5–7 sentences): Why did Anna Sewell write *Black Beauty*, and how did her own life prepare her to write it? Use at least two dates.

Did you know? Anna Sewell received only £40 for *Black Beauty*, with no share of later sales. She wrote no other book. Her mother, Mary Sewell, was herself a best-selling author of story-poems for children, such as *Mother’s Last Words* (1860), and Anna helped edit her mother’s work.

Map or diagram. Your map should show Great Yarmouth on the coast, Norwich about 20 miles inland to the west, and Old Catton just north of Norwich. London is about 110 miles to the south-west of Norwich.

Goes deeper in. Literature, “Novels and Their Authors,” and History, “Victorian Britain” (coming soon).

For families. Sources: Britannica; Anna Sewell House and Norfolk Museums materials; Mary Bayly’s early biography (1880s). Her age at the injury is usually given as 14; accounts vary on details. The “special aim” quotation comes from her journal as printed in early biographies. The sales figure (“tens of millions”) is an estimate; exact totals are not known. Picture: Bonheur, *The Horse Fair*, Metropolitan Museum of Art (87.25).

PRACTICE

1. **EASY** In what year was *Black Beauty* published, and in what city?
2. **EASY** Why did Anna Sewell depend on horses to get around?
3. **MEDIUM** How old was Anna Sewell when *Black Beauty* came out, and how long did she live afterward?
4. **MEDIUM** In her own words, what was the book's "special aim"?
5. **CHALLENGE** Why do you think telling the story in the horse's own voice made readers care more than a speech about cruelty would?

Make it a game · Who Am I? Horse Voices. Each player secretly picks a working animal (cab horse, plough horse, pony, donkey, sheepdog). Speaking as "I," they give three clues about their day and how people treat them. The others guess the animal. The best clue-giver chooses the next speaker.

Scripture. "Open thy mouth for the dumb in the cause of all such as are appointed to destruction." (Proverbs 31:8, KJV)

"The dumb" means those who cannot speak for themselves. Horses cannot complain in words, so Anna Sewell, a Christian woman, gave them a voice. Her pencil became a way of obeying this command.

Practice: answers

1. 1877, in Norwich (by Jarrold and Sons).
2. She hurt both ankles at about age 14 and could never walk far again, so she drove a pony and trap.
3. She was 57 (born March 1820, book November 1877). She lived about five months more, dying in April 1878.
4. "To induce kindness, sympathy, and an understanding treatment of horses."
5. Sample: When the horse says "I," the reader feels the pain from the inside and sees people through the horse's eyes. It is harder to ignore suffering when you have come to know and love the one who suffers.

4.2 BLACK BEAUTY: GINGER, MERRYLEGS AND THE BEARING REIN

OBJECTIVES

- Compare three horse characters in *Black Beauty*: Beauty, Ginger and Merrylegs.
- Explain what a bearing rein was and why Anna Sewell argued against it.
- Draw and label a diagram of a Victorian carriage horse in harness.

Warm-up. Hold your chin up as high as you can and keep it there while you walk across the room and back. Now try to pull a heavy laundry basket the same way. How does it feel? Many carriage horses in the 1800s had to work like that all day.

Video slot. Video coming. Victorian carriage harness and the bearing rein (check rein); *Black Beauty* book overview. Search approved channels (Kentucky Horse Park, Carriage Association of America, a museum or literature channel); preview first.

KEY TERMS

bearing rein

A strap running from the bit up over the horse's head or neck to a hook on the harness, forcing the head high. In America it was often called a check rein.

bit

The metal bar in a horse's mouth to which the reins are fastened.

harness

The straps, collar and fittings that join a horse to a cart or carriage.

narrator

The one who tells a story. In *Black Beauty* the narrator is the horse himself.

character foil

A character whose different nature helps us see the main character more clearly, as fiery Ginger does for gentle Beauty.

CORE IDEAS

Black Beauty opens with the horse remembering his first home: "The first place that I can well remember was a large pleasant meadow with a pond of clear water in it." Beauty is a handsome black horse with one white foot and a white star. His mother, Duchess, tells him to grow up gentle and good, to work with a will and never to bite or kick. Beauty is gently trained by Farmer Grey and sold to Squire Gordon of Birtwick Park, a kind master whose coachman, John Manly, never strikes a horse in anger.

At Birtwick Beauty meets two stable companions. **Merrylegs** is a fat little gray pony who carries the Squire's children. He is cheerful and patient, though he tells Beauty he once

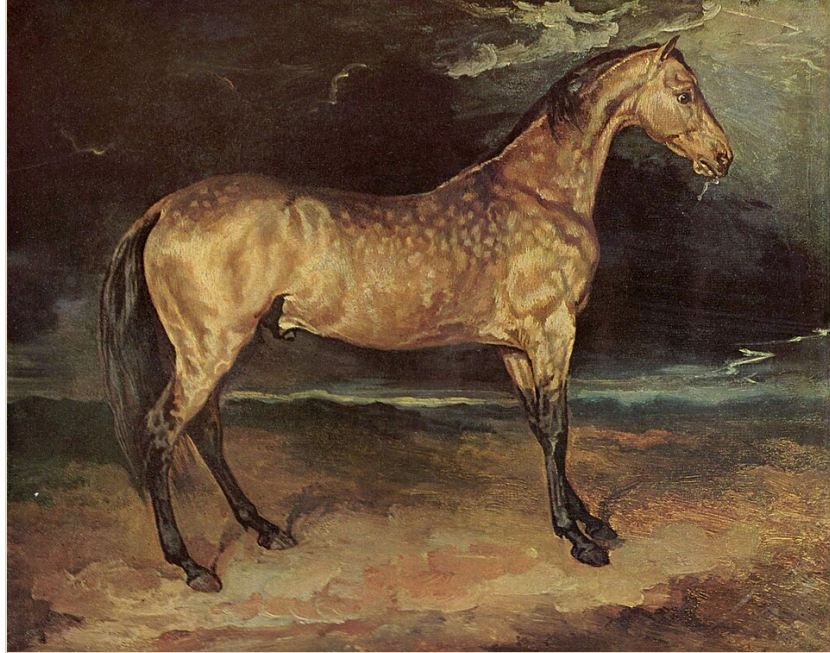
pitched off some boys who rode him too hard, to teach them manners. **Ginger** is a tall chestnut mare with a bad habit of biting and snapping. She explains why: she was taken from her mother young, broken in roughly by men who used whips and force, and never shown kindness. Ginger is Beauty's **character foil**. Through her, Sewell shows that cruelty makes a horse dangerous, and kindness slowly heals her.

When Mrs. Gordon falls ill and the family must move abroad, the horses are sold. Merrylegs goes to the vicar, Mr. Blomefield. Beauty and Ginger go to Earlshall Park, where the lady of the house wants her carriage horses to look grand, with heads held high. The coachman, York, is ordered to tighten the **bearing rein**. This strap ran from the **bit** up to a hook on the harness pad, so the horse could not lower its head. A horse pulling a load naturally drops and stretches its neck to throw its weight into the collar. With the rein pulled tight, the work became painful, the mouth was sore and the neck ached.

Beauty endures the rein for four long months. Ginger cannot. One day, as York tightens it further, she rears, kicks and plunges until she is cut free. She is never used in harness at Earlshall again. Later Beauty's knees are broken in a fall caused by a drunken groom, and he sinks from fine carriage horse to London cab horse. Years afterward he meets Ginger, worn out and thin, pulling a cab. Soon after, he sees a dead chestnut horse carried past in a cart and believes it is she.

Sewell aimed the book at real practices. Fashion, not need, kept the bearing rein in use. Animal-protection societies in Britain and America campaigned against tight bearing reins in the late 1800s, and *Black Beauty* gave their arguments a face. By the early 1900s the tight bearing rein had largely fallen out of fashion. The book does not preach for long; it lets readers watch Ginger and Beauty and judge for themselves.

PICTURE STUDY



Horse Frightened by Lightning, Théodore Géricault, c. 1813-1814 · Oil on canvas · The National Gallery, London
Wikimedia Commons · Public domain

Théodore Géricault was a French painter who loved horses and studied them in stables and at the races. Here a horse alone on a dark plain reacts to a flash of lightning. Its whole body shows fear, much as Ginger's does when she is pushed past what she can bear.

Look closely

- Look at the horse's head and eye. Which way is it turning, and what does that show?
- Find the lightning. Where does the light fall on the horse?
- Look at the legs. Is the horse standing still or about to move?

Talk about it

1. How could a rider or driver calm a frightened horse like this one?
2. Ginger was frightened and angry because of the way men had treated her. How is fear different from a "bad" temper?

Safety first. Do not try a bearing rein or any tight strap on a real horse or pony. If you visit a stable, ask the owner to show you a driving harness while the horse is not wearing it.

HANDS-ON: LABELLED DIAGRAM: THE CARRIAGE HORSE IN HARNESS

Draw a side view of a Victorian carriage horse in harness and show where the bearing rein went and why it hurt.

You will need

- Plain paper and a pencil
- A red and a blue colored pencil
- A ruler
- A picture of a driving harness from a book or museum website, if available

Steps

1. Draw a horse from the side, standing, with its head held unnaturally high.
2. Draw and label the parts of the harness: bridle, blinkers, bit, reins, collar, saddle pad, traces (the straps that pull the carriage) and the hook on top of the saddle pad.
3. In red, draw the bearing rein running from the bit up past the head to the hook on the saddle pad. Label it “bearing rein.”
4. In blue, draw a dotted line showing where the head and neck would be if the horse were free to stretch down while pulling. Label it “natural pulling position.”
5. Under the diagram, write two reasons the tight bearing rein was cruel.

Check your work

- My diagram has at least eight labelled parts.
- The bearing rein is drawn in red and the natural position in blue.
- I wrote two reasons the rein hurt the horse.

FIELD NOTEBOOK

1. **Field Notebook, Trail D, page 2.** Glue in or copy your harness diagram.
2. Write a paragraph comparing Ginger and Merrylegs: how they were treated when young, how they behave, and what each teaches about how horses should be raised.

Did you know? Beauty has several names in the book: Darkie as a foal, Black Beauty at Birtwick, Black Auster at Earlsall, Jack in London, and Black Beauty again at the end, when his old stable boy Joe Green recognises him by his white foot and star.

Map or diagram. On your harness diagram, the collar is where the horse pushes to pull the load. When a horse pulls hard, its head and neck naturally stretch forward and down; the bearing rein stopped exactly that.

Goes deeper in. Literature, “Characters and Narrators,” and Gardening & Animals, “Caring for Animals” (coming soon).

For families. Sources: *Black Beauty* (1877; public domain), chapters on Birtwick, Earlsall (“The Bearing Rein,” “Ginger’s Story”) and London. A free text is at Project Gutenberg. The book includes a few sad scenes (Ginger’s death, a fire at an inn, Beauty’s fall); none are graphic. The fading of the tight bearing rein after the book is well

documented, but the book was one cause among several, so the stop does not credit it alone.

PRACTICE

1. **EASY** Who tells the story in *Black Beauty*?
2. **EASY** What kind of animal is Merrylegs, and whom does he carry?
3. **MEDIUM** Why did Ginger bite and snap when Beauty first met her?
4. **MEDIUM** What did a bearing rein do, and why was it used?
5. **CHALLENGE** Beauty endured the bearing rein for four months and Ginger rebelled. Which response does the book seem to admire, and what happens to each horse?

Make it a game • Who Said It?. One player reads a description (“I pitched off boys who rode me too hard,” “I would not bear the rein,” “I never strike a horse in anger”). The others call out the character: Merrylegs, Ginger, Beauty, John Manly, York or Joe Green. Each right answer earns a carrot drawn on a scorecard.

Scripture. “Be ye not as the horse, or as the mule, which have no understanding: whose mouth must be held in with bit and bridle, lest they come near unto thee.” (Psalm 32:9, KJV)

The bit and bridle are right and needful tools for guiding a horse. Scripture assumes their proper use, not cruelty. God wants His people to follow Him with understanding hearts, not to be pulled by force.

Practice: answers

1. Black Beauty, the horse himself.
2. A fat little gray pony; he carries Squire Gordon’s children.
3. She had been taken young from her mother and broken in roughly with whips and force, and no one had shown her kindness.
4. It held the horse’s head high by a strap from the bit to a hook on the harness. It was used for fashion, to make carriage horses look proud.
5. The book admires Beauty’s patience but shows Ginger’s rebellion as understandable. Beauty keeps working until the rein makes his life miserable; Ginger is taken out of harness but her spirit and health are later ruined by hard use. Sewell’s point is that the rein was wrong, not that either horse was wicked.

4.3 KINDNESS TO ANIMALS (PROVERBS 12:10)

OBJECTIVES

- Explain Proverbs 12:10 and find three laws in the books of Moses that protect working animals.
- Tell how the first animal-protection laws and societies began in Britain (1822–1824) and America (1866).
- Make a labelled diagram of a horse's daily needs, with real amounts.

Warm-up. List everything a pet or farm animal you know needs in one day. Put a star by the things it cannot get for itself. Those starred things are the owner's duty.

Video slot. Video coming. Basic daily horse care: water, hay, shelter, hooves and companionship. Search approved channels (Kentucky Horse Park, a 4-H or Pony Club channel, a university extension equine program); preview first.

KEY TERMS

righteous

Right with God and doing what is right. In Proverbs the righteous man's goodness reaches even to his animals.

regardeth

Old English for "pays attention to, cares about." The Hebrew word means to know: the good man knows what his animal needs.

stewardship

Caring for something that belongs to another. God owns the animals; people are His stewards.

forage

Grass and hay, the main food of horses.

SPCA

Society for the Prevention of Cruelty to Animals. The first was founded in London in 1824; the American one (ASPCA) in New York in 1866.

CORE IDEAS

Proverbs 12:10 says, "A righteous man regardeth the life of his beast: but the tender mercies of the wicked are cruel." The Hebrew word behind "regardeth" means "knows." A good man knows his animal: when it is thirsty, tired, lame or afraid. The second half is sharp. Even the "tender mercies" of a wicked man, his best moments, are cruel, because a heart that ignores God will not truly care for the weak.

The law God gave through Moses put this into practice. The Sabbath was a rest for animals too: “that thine ox and thine ass may rest” (Exodus 23:12). A farmer was not to muzzle an ox while it threshed grain, so it could eat as it worked (Deuteronomy 25:4). If a man saw his enemy’s donkey fallen under its load, he had to help lift it (Exodus 23:5). In Genesis, God gave mankind dominion over the animals, which means rule as a steward, not as a tyrant. And at the end of the book of Jonah, God reminds the prophet that He cares for Nineveh’s people “and also much cattle” (Jonah 4:11).

For centuries, though, the law of England did little to protect animals. That changed in the 1800s, and Christians led the way. In 1822 Parliament passed Martin’s Act, named for the Irish member Richard Martin, protecting horses, cattle and other large animals from cruelty. On 16 June 1824, a group met in a London coffee house to found the Society for the Prevention of Cruelty to Animals. Among them were the Reverend Arthur Broome, an Anglican clergyman, and William Wilberforce, the Christian statesman who fought the slave trade. In 1840 Queen Victoria allowed it to add “Royal” to its name: the RSPCA.

In America, Henry Bergh founded the ASPCA in New York City in 1866. Horses then pulled nearly every cart, cab and streetcar, and Bergh’s officers stopped drivers who beat or overloaded them. Twenty-four years later, George Angell of Massachusetts spread *Black Beauty* across the country to teach the same lessons.

Kindness to a horse is practical. A 1,000-pound horse drinks about 5 to 10 gallons of water a day, more in hot weather, and eats about 15 to 25 pounds of hay or other **forage**. It needs shelter from storms, hooves trimmed every 6 to 8 weeks, room to move and the company of other horses. Kindness also means a calm voice, a fair load, rest after work, and a vet when it is sick. Good **stewardship** is not soft feelings; it is faithful daily work.

PICTURE STUDY



Mares and Foals in a River Landscape, George Stubbs, c. 1763–1768 · Oil on canvas · Tate Britain, London
Wikimedia Commons · Public domain

George Stubbs spent about eighteen months studying the bones and muscles of horses so that he could paint them truly. He painted several pictures of mares with their foals for the owners of great horse farms. These horses are well fed, rested and at peace: a picture of what Proverbs 12:10 looks like.

Look closely

- Count the mares and the foals. Can you tell which foal belongs to which mother?
- Look at the horses' coats and bodies. What do they tell you about how they are cared for?
- What in the landscape gives these horses what they need?

Talk about it

1. How is this picture different from the working horses of *Black Beauty's* London?
2. What signs would show you that a horse was not being cared for well?

Safety first. If you see an animal that seems neglected or hurt, do not go into its field or pen; tell a parent, who can contact the owner or the local animal-control office. Around any horse, approach from the front and side, speak quietly and never stand directly behind it.

HANDS-ON: A HORSE'S DAILY NEEDS DIAGRAM

Make a wheel diagram showing what a horse needs every day, with real amounts, as a first step toward the Horses track's care-chart project.

You will need

- A large sheet of paper and a dinner plate to trace a circle
- A ruler, pencil and colored pencils
- A measuring cup and a gallon jug (optional)

Steps

1. Trace a big circle. Draw a small horse head in the center and divide the circle into six wedges.
2. Label the wedges: Water, Forage, Shelter, Hooves, Company, Rest and Kindness (combine the last two if you need to).
3. In each wedge write the amount or how often: water 5-10 gallons a day; hay 15-25 pounds a day for a 1,000-pound horse; shelter from wind, rain and sun; hooves trimmed every 6-8 weeks; at least one horse friend; a day of rest each week.
4. Optional: fill a gallon jug with water five times and pour it into a bucket or tub to see the least a horse drinks in a day.
5. Write Proverbs 12:10 around the outside of the circle.

Check your work

- My wheel has at least six labelled needs.
- I wrote real amounts or how often for each.
- Proverbs 12:10 is written on the diagram.

FIELD NOTEBOOK

1. **Field Notebook, Trail D, page 3.** Glue in or copy your daily-needs wheel.
2. Write a paragraph: What does it mean to "regard the life of your beast"? Use one law from the Bible, one fact from the 1820s, and one example of kindness you can do this week for an animal you know.

Did you know? Richard Martin was nicknamed "Humanity Dick" by King George IV. The 1824 society was so short of money in its first years that its secretary was briefly jailed for its debts, but it survived and became one of the oldest animal charities in the world.

Map or diagram. Your wheel diagram is the first piece of the track project "a daily care chart costed out." Keep it; later you can add the price of hay, feed and the farrier to learn what a horse really costs.

Goes deeper in. Gardening & Animals, “Caring for Animals,” and History, “Reformers of the 1800s” (coming soon).

For families. Sources: KJV text of Proverbs 12:10, Exodus 23:5 and 23:12, Deuteronomy 25:4, Jonah 4:11; RSPCA history pages; ASPCA history pages. Daily water and hay figures are typical ranges from university extension services for an average 1,000-pound horse at light work; actual needs vary with size, weather and work, and an owner should follow a vet’s advice.

PRACTICE

1. **EASY** Quote Proverbs 12:10 from memory, or as near as you can.
2. **EASY** In what year and city was the first SPCA founded?
3. **MEDIUM** Name two laws of Moses that protected working animals.
4. **MEDIUM** A horse drinks 8 gallons of water a day. How many gallons is that in one week? In a 30-day month?
5. **CHALLENGE** Why does the verse say that even the “tender mercies of the wicked are cruel”?

Make it a game • Kind or Cruel?. A caller reads short scenes (“The driver lets his tired horse rest at the top of the hill,” “The boy forgets to fill the water bucket on a hot day”). Players stand tall for kind and crouch for cruel or careless. For each careless scene, the first player to say how to make it right scores a point.

Scripture. “A righteous man regardeth the life of his beast: but the tender mercies of the wicked are cruel.” (Proverbs 12:10, KJV)

This verse is the heart of the whole trail. Anna Sewell, Marguerite Henry and Walter Farley all wrote about people who learned to know and care for a horse. God, who feeds the ravens and sees the sparrow fall, asks His people to care for His creatures too.

Practice: answers

1. “A righteous man regardeth the life of his beast: but the tender mercies of the wicked are cruel.”
2. 1824, in London.
3. Any two: Sabbath rest for the ox and ass (Exodus 23:12); do not muzzle the ox treading out grain (Deuteronomy 25:4); help lift your enemy’s fallen donkey (Exodus 23:5).
4. 56 gallons in a week (8×7); 240 gallons in 30 days (8×30).
5. Sample: Kindness that flows from a selfish heart is shallow; it serves the owner’s convenience or pride, not the animal’s good. Real care comes from a heart made right with God, so it shows in faithful daily duty, not only in good moods.

4.4 MARGUERITE HENRY'S MISTY OF CHINCOTEAGUE

OBJECTIVES

- Tell who Marguerite Henry was and how she researched *Misty of Chincoteague* (1947).
- Summarize the plot and explain the choice Paul makes at the end.
- Draw a labelled map of Assateague and Chincoteague islands.

Warm-up. Have you ever saved up for something you wanted very much? Write how long it took and what you gave up. In this story two children save for a whole year to buy a horse no one has ever caught.

Video slot. Video coming. Marguerite Henry and *Misty of Chincoteague*; the Chincoteague ponies and the Museum of Chincoteague Island. Search approved channels (Museum of Chincoteague Island, Chincoteague National Wildlife Refuge / U.S. Fish and Wildlife Service, a library channel); preview first.

KEY TERMS

barrier island

A long, narrow sandy island lying along a coast, sheltering the mainland from ocean waves. Assateague is one.

filly

A young female horse, usually under four years old.

Newbery Honor

An American award for one of the best children's books of the year. *Misty* won one in 1948.

realistic fiction

A made-up story that could really happen, often built on real people and places.

research

Careful gathering of facts before writing, by visiting, watching, interviewing and reading.

CORE IDEAS

Marguerite Henry (1902–1997) was born in Milwaukee, Wisconsin, and spent most of her writing life in Wayne, Illinois, surrounded by horses, dogs and a burro. She wrote more than fifty books, most about horses, and almost all of them were illustrated by her friend Wesley Dennis. She believed a horse story should be true to life, so she always began with **research**.

In 1946 Henry and Dennis traveled to Chincoteague Island, Virginia, to see Pony Penning, when wild ponies from neighboring Assateague Island are driven across the channel. There she met the Beebe family, who raised ponies on their ranch, and their grandchildren Paul

and Maureen. At the Beebe Ranch she saw a golden-and-white **filly** born on 20 July 1946. Henry bought the foal and took her home to Illinois. The filly's name was Misty.

Misty of Chincoteague came out in 1947 and won a **Newbery Honor** in 1948. It is **realistic fiction**: Paul and Maureen are real, and so are their grandparents, the islands and the roundup, but Henry shaped the events into a story. In the book, the children long to own the Phantom, a wild mare on Assateague who has escaped every roundup. They work all year, gentling colts and doing every job they can find, to earn the money. On Paul's first roundup as a rider, he finds the Phantom with a newborn foal at her side and brings both across the channel. The children buy them, and the foal is named Misty.

Paul and Maureen train the Phantom, and in the next year's Pony Penning race she beats the fastest horse on the island. Yet Paul sees that she is not truly happy. When the wild stallion Pied Piper calls from Assateague, the children make a hard and loving choice: they set the Phantom free to return to her herd. Misty, born among people, stays with them. The ending teaches that loving something sometimes means letting it go.

The real Misty lived with Henry in Illinois for about ten years and became famous. Children wrote her letters, and she visited schools, libraries and book fairs. In 1957 she went home to the Beebe Ranch to raise foals. One of them, Stormy, was born in 1962 just after a great storm flooded the islands, and Henry told that story in *Stormy, Misty's Foal* (1963). A film, *Misty*, appeared in 1961. Misty died in her sleep on 16 October 1972, aged 26.

PICTURE STUDY



Morning Ride along the Beach, Anton Mauve, 1876 · Oil on canvas · Rijksmuseum, Amsterdam
Wikimedia Commons · Public domain

Anton Mauve was a Dutch painter of quiet country and seaside scenes, and for a short time a teacher of Vincent van Gogh, a relative by marriage. Here riders go out along the wide beach

at Scheveningen in the early morning. The sand, sea and soft sky are much like the shores of Assateague, where the Phantom ran free.

Look closely

- Find the line where the sea meets the sand. How does the painter show wet sand?
- Count the riders. Which horse is closest to you?
- What colors does Mauve use for the sky? What time of day does it feel like?

Talk about it

1. How would it feel to ride along a beach like this? What would you hear and smell?
2. Why do you think wild ponies can live on a sandy island like Assateague?

HANDS-ON: MAP OF MISTY’S ISLANDS

Draw a labelled map of the islands where *Misty of Chincoteague* takes place.

You will need

- An atlas or an online map of the Delmarva Peninsula (Delaware, Maryland and Virginia)
- Paper, pencil and colored pencils
- A fine black pen

Steps

1. Sketch the coast of the Delmarva Peninsula and color the Atlantic Ocean blue on the east.
2. Draw Assateague Island as a long thin island along the coast, crossing from Maryland into Virginia. Draw the state line across it.
3. Draw Chincoteague Island, smaller and tucked between Assateague and the mainland. Label Assateague Channel, the narrow water between them, and Chincoteague Bay.
4. Mark the Beebe Ranch with a small house symbol on Chincoteague, and draw an arrow across Assateague Channel labelled “Pony Penning swim.”
5. Add a compass rose, a key and a title: “Misty’s Islands.”

Check your work

- My map shows both islands, the channel, the ocean and the state line.
- The ranch and the swim route are marked.
- My map has a key, a compass rose and a title.

FIELD NOTEBOOK

1. **Field Notebook, Trail D, page 4.** Glue in or copy your map of Misty’s islands.
2. Write a paragraph: Was Paul right to set the Phantom free? Give two reasons from the story for your answer.

Did you know? Misty was a palomino pinto: golden patches on white. On her side was a white marking that Henry said looked like a map of the United States. After her death Misty was preserved, and today she stands, with her foal Stormy, in the Museum of Chincoteague Island.

Map or diagram. Assateague Island is about 37 miles long. The northern part is in Maryland and the southern part is in Virginia. A fence near the state line keeps the two pony herds apart.

Goes deeper in. Literature, “Realistic Fiction,” and Geography, “Islands and Coasts” (coming soon).

For families. Sources: Museum of Chincoteague Island; Smithsonian Magazine, “The True Story of Misty of Chincoteague” (2018); Marguerite Henry’s books (in copyright; summarized, not quoted). Wesley Dennis’s illustrations are also in copyright, so the picture study uses a public-domain painting instead. Henry’s books simplify some family facts; the book’s events are not a strict record of the real Beebes.

PRACTICE

1. **EASY** In what year was *Misty of Chincoteague* published, and who illustrated it?
2. **EASY** Who is the Phantom?
3. **MEDIUM** Name two ways Marguerite Henry researched the book.
4. **MEDIUM** The real Misty was born on 20 July 1946 and died on 16 October 1972. How old was she, in years and nearly how many months?
5. **CHALLENGE** Why is *Misty* called realistic fiction and not a true story or a fantasy?

Make it a game · Saving for the Phantom. Each player starts with zero “dollars” and takes turns rolling a die: 1-2 = gather clams (+\$5), 3-4 = gentle a pony (+\$10), 5 = buy feed (-\$5), 6 = storm day (no money). The first to reach \$100 wins and must say one thing Paul and Maureen did to earn money.

Scripture. “Who hath sent out the wild ass free? or who hath loosed the bands of the wild ass?” (Job 39:5, KJV)

God asks Job who made the wild animals free. The answer is God Himself. Paul’s choice to set the Phantom free honors the kind of creature God made her to be.

Practice: answers

1. 1947; Wesley Dennis.
2. A wild mare on Assateague Island who had escaped every roundup; she is Misty’s mother in the book.
3. Any two: she traveled to Chincoteague for Pony Penning in 1946; she met and talked with the Beebe family; she watched the ponies; she bought the real Misty and kept her.

4. 26 years and nearly 3 months (26 years, 2 months, 26 days).
5. Its people and places are real and its events could really happen, but the author arranged and invented parts of the plot (such as the Phantom and her race) to make a story. A fantasy would include impossible things; a true story would report only what happened.

4.5 PONY PENNING DAY AND THE REAL MISTY

OBJECTIVES

- Describe the events of Pony Penning week, from roundup to swim to auction.
- Explain why the herd is kept at about 150 ponies and how the auction helps both ponies and town.
- Tell how the real Misty helped Chincoteague after the great storm of 1962.

Warm-up. Imagine you must move 150 ponies across a channel of salt water without a bridge or a boat big enough. What would you need to know about the water first? Jot down three questions.

Video slot. Video coming. The Chincoteague Pony Swim across Assateague Channel: saltwater cowboys, slack tide and the ponies landing. Search approved channels (Chincoteague National Wildlife Refuge / U.S. Fish and Wildlife Service, Assateague Island National Seashore / National Park Service, Museum of Chincoteague Island); preview first.

KEY TERMS

slack tide

The short time between the incoming and outgoing tide when the water barely moves. The ponies swim then, so the current will not sweep them away.

saltwater cowboys

The riders, many of them volunteer firemen, who round up the Assateague ponies and drive them to the swim.

auction

A sale where buyers call out higher and higher prices and the highest offer wins.

buyback foal

A foal bought at auction and given back to the fire company so it can return to live wild on Assateague.

carrying capacity

The largest number of animals a place can feed and support year after year without being harmed.

CORE IDEAS

Long before anyone wrote a book about them, the islanders of Virginia's Eastern Shore held "penning" days, when owners rounded up livestock that ran loose on the islands and marked or sold the young. A written description of a pony penning on Assateague dates to the 1830s. No one knows for sure how the ponies first came there. A favorite legend says they swam

ashore from a wrecked Spanish ship; most historians think they descend from horses that colonists turned out to graze on the islands in the late 1600s, where no fences were needed.

Modern Pony Penning began in 1924-1925. After fires burned part of the town of Chincoteague, the townspeople formed the Chincoteague Volunteer Fire Company, and in 1925 the fire company held a carnival with a pony sale to buy fire equipment. It has held Pony Penning every July since, except a few years when it could not be held. Over time the fire company came to own the Virginia herd, which grazes on the Chincoteague National Wildlife Refuge (founded 1943) under a permit. The Maryland herd, on the northern end of Assateague, is a separate, truly wild herd cared for by the National Park Service.

The week follows a pattern. The **saltwater cowboys** round the ponies up on Assateague and pen them. Vets check every pony. On the last Wednesday of July, at **slack tide**, the ponies are driven into Assateague Channel and swim to Chincoteague while firemen in boats keep watch. The swim usually takes only a few minutes. The first foal ashore is crowned King or Queen Neptune and raffled off. On Thursday many of the foals are sold at **auction**. On Friday the adult ponies swim back to Assateague, joined by any **buyback foals**.

Why sell foals at all? An island has a **carrying capacity**. Too many ponies would overgraze the marsh grass, hurt the birds and wildlife of the refuge, and starve. The refuge permit keeps the Virginia herd at no more than about 150 adult ponies. The auction keeps the herd healthy, pays the fire company's bills and the ponies' vet care, and sends foals to new homes across the country.

The real Misty was born on the Beebe Ranch, not in the wild. After ten years with Marguerite Henry, she came home to Chincoteague in 1957. In March 1962 the Ash Wednesday Storm, a huge nor'easter, flooded the islands, and dozens of Assateague ponies drowned. As the story is told, Misty, heavy with foal, rode out the storm inside the Beebe house. Days later she gave birth to Stormy. Misty, Stormy and the 1961 film *Misty* were used to raise money to replace the lost ponies, and the herd recovered.

PICTURE STUDY



The Bronco Buster, Frederic Remington, 1895 · Bronze sculpture · Casts in many museums, including the Amon Carter Museum of American Art (Fort Worth) and the Metropolitan Museum of Art (New York)
Wikimedia Commons · Public domain

Frederic Remington was an American artist who painted and sculpted cowboys, soldiers and horses of the West. *The Bronco Buster* was his first sculpture. A cowboy hangs on as a half-wild horse rears up. The saltwater cowboys of Chincoteague are a long way from the Western plains, but they need the same courage and horse sense.

Look closely

- Walk around the sculpture in your mind, or look at photos from different sides. How does it balance on so small a base?
- Look at the cowboy's hands and legs. How is he staying on?
- Look at the horse's mouth, ears and tail. What do they tell you?

Talk about it

1. Why would a horse born free fight a rider at first?
2. How is gentling a pony patiently different from "busting" a bronco?

Safety first. If you visit Assateague or Chincoteague, never feed, pet or walk up to the wild ponies: they kick and bite, and feeding them harms their health. The parks ask visitors to stay at least 40 feet away, about the length of a school bus. On Pony Penning day, stay with your family behind the marked lines and away from the water's edge.

HANDS-ON: DIAGRAM OF THE PONY SWIM AND A PONY PENNING TIMELINE

Draw a diagram of the swim across Assateague Channel and a timeline of Pony Penning week.

You will need

- Paper, ruler, pencil and colored pencils
- Your map from Stop D4, if you made one

Steps

1. Draw two strips of land with a blue channel between them. Label the left one Assateague Island and the right one Chincoteague Island, and the water Assateague Channel.
2. Draw a curved row of small pony heads swimming across. Add two small boats labelled “fire company boats” and a few riders on the shore labelled “saltwater cowboys.”
3. Draw a small tide gauge in a corner: arrows in, a flat line labelled “slack tide: swim now,” and arrows out.
4. Below, draw a timeline with five boxes: Roundup and vet checks → Wednesday swim → King or Queen Neptune → Thursday auction → Friday swim back.
5. Under the timeline, write one sentence explaining why the herd is kept at about 150 ponies.

Check your work

- My diagram labels both islands, the channel, boats and cowboys.
- I showed slack tide on a tide gauge.
- My timeline has five steps in the right order.

FIELD NOTEBOOK

1. **Field Notebook, Trail D, page 5.** Glue in or copy your swim diagram and timeline.
2. Write a paragraph as a newspaper reporter on Pony Penning day: who, what, when, where and why. Include at least two numbers.

Did you know? Chincoteague ponies often look round-bellied. They are not fat: they eat salty marsh grasses and drink about twice as much fresh water as a mainland horse, which makes them look bloated. Living on a poor island diet for many generations is one reason they stay pony-sized.

Map or diagram. Slack tide comes roughly every six hours, between high and low water, and lasts a short time. The fire company times the swim by the tide tables, so the hour changes from year to year.

Goes deeper in. Geography, “Islands and Coasts,” Gardening & Animals, “Caring for

Animals,” and Small Business & Economics, “How an Auction Works” (coming soon).

For families. Sources: Chincoteague Volunteer Fire Company history pages; U.S. Fish and Wildlife Service (Chincoteague NWR); National Park Service (Assateague Island National Seashore); Smithsonian Magazine (2018) on Misty and the 1962 storm. The shipwreck origin is unproven and treated as legend. The swim was not held in a few years (for example 2020); details of how and when the fire company acquired the herd vary in accounts, so the stop says “over time.” The story of Misty sheltering in the Beebe house comes from family and museum accounts.

PRACTICE

1. **EASY** On which day of the week, and in which month, do the ponies swim to Chincoteague?
2. **EASY** Why do the ponies swim at slack tide?
3. **MEDIUM** Name two good things the yearly auction does.
4. **MEDIUM** The first fire-company Pony Penning was in 1925. How many years had passed by the 100th anniversary year? What year was that?
5. **CHALLENGE** The herd is 150 adults. Suppose 70 foals are born in spring and no adults die. If the herd must start next year at 150 adults plus 10 buyback foals, how many foals must be sold?

Make it a game · Slack Tide Swim. One player is the Tide and calls “Flood!”, “Ebb!” or “Slack!” The others are ponies at one side of the room. On “Flood” and “Ebb” they must sway and stay put; on “Slack” they “swim” across with paddling arms. Any pony who moves on the wrong call goes back to Assateague (the start). The first pony across becomes King or Queen Neptune and the next Tide.

Scripture. “For every beast of the forest is mine, and the cattle upon a thousand hills.” (Psalm 50:10, KJV)

The ponies of Assateague belong first to God. The fire company, the refuge and the families who buy foals are stewards who answer to Him for how the herd is kept.

Practice: answers

1. The last Wednesday in July.
2. Because the water is barely moving then, so the current will not sweep the ponies away.
3. Any two: keeps the herd at a healthy size (about 150) so the island is not overgrazed; raises money for the fire company and the ponies’ vet care; gives foals good new homes.
4. 100 years; the year 2025.
5. 60 foals (70 born – 10 buyback foals kept = 60 sold).

4.6 KING OF THE WIND AND THE GODOLPHIN ARABIAN

OBJECTIVES

- Summarize Marguerite Henry's *King of the Wind* (1948) and the faithfulness of the boy Agba.
- Separate the known facts about the real Godolphin Arabian (c. 1724–1753) from legend.
- Draw a map of Sham's journey and a family-tree diagram of his descendants.

Warm-up. Every Thoroughbred racehorse alive today traces back to one of just three stallions brought to England about 300 years ago. Guess: how many generations is 300 years for horses, if a new generation is born about every 10 years?

Video slot. Video coming. The Godolphin Arabian and the three foundation sires of the Thoroughbred (Byerley Turk, Darley Arabian, Godolphin Arabian). Search approved channels (Kentucky Horse Park, National Horseracing Museum, Smithsonian, a library channel); preview first.

KEY TERMS

foundation sire

One of the first stallions from which a whole breed descends. The Thoroughbred has three.

Newbery Medal

The top yearly American award for a children's book. *King of the Wind* won it in 1949.

pedigree

The written family tree of an animal, showing its parents, grandparents and further ancestors.

mute

Unable to speak. Agba, the boy in the story, cannot speak and shows his love by faithful deeds.

omen

A sign that people believe tells of good or bad things to come.

CORE IDEAS

Marguerite Henry followed *Misty* with a very different book. *King of the Wind: The Story of the Godolphin Arabian* (1948), again illustrated by Wesley Dennis, won the **Newbery Medal** in 1949. It tells the life of a real horse from the early 1700s, though much of the story is Henry's imagining.

In the book a bay colt named Sham is born in the stables of the Sultan of Morocco. His mother dies, and a **mute** stable boy, Agba, keeps him alive on camel's milk. Sham carries

two **omens**: a white spot on one heel, a sign of swiftness, and a wheat-ear mark on his chest, a sign of evil. When Sham is grown, the Sultan sends him with five other horses as a gift to the boy king Louis XV of France, and Agba goes along to care for him.

The French court sees only small, thin, travel-worn horses. Sham is sent to pull a cart, and he and Agba sink into poverty and hard work, from the streets of Paris to a debtors' prison in England. Through it all Agba never leaves his horse. Kind people help them, among them a Quaker who buys Sham out of cruel hands. At last Sham reaches the stud of the Earl of Godolphin near Cambridge. When his first sons, Lath and Cade, begin winning races at Newmarket, everyone sees what Sham truly is, and boy and horse are honored at last. Henry also gives Sham a faithful cat friend, Grimalkin.

What do we really know? The Godolphin Arabian was foaled about 1724, probably in Yemen or Syria. Some writers called him the Godolphin Barb, and his breed is still argued over. By about 1729 he was in England, owned by Edward Coke of Derbyshire. After Coke died in 1733 the horse passed to Francis, 2nd Earl of Godolphin, and lived at the Gog Magog Hills near Cambridge. He died there in December 1753, aged about 29, and was buried under a stone in the stable yard. The story of a gift to the French king and a Paris water cart is old tradition, not proven fact.

The facts that matter most are in the **pedigree** books. With the Byerley Turk and the Darley Arabian, the Godolphin Arabian is one of the three **foundation sires** of the Thoroughbred. His sons Lath, Cade and Regulus were champions. Through Cade's son Matchem, his line of sires runs down to Man o' War, Seabiscuit's grandfather. The racehorse Whistlejacket, painted by George Stubbs, was his grandson.

PICTURE STUDY



Whistlejacket, George Stubbs, c. 1762 · Oil on canvas · The National Gallery, London
Wikimedia Commons · Public domain

Whistlejacket was a racehorse foaled in 1749 and owned by the Marquess of Rockingham. His sire, Mogul, was a son of the Godolphin Arabian, so Whistlejacket was the Godolphin Arabian's grandson. Stubbs painted him life-size, about 9 feet tall, with no background at all, so nothing distracts from the horse.

Look closely

- Look for the Arabian marks: the fine head, large eye, wide nostril and arched neck.
- Why do you think Stubbs left out any background, rider or landscape?
- Look at the muscles of the hind legs. How does Stubbs show the strength needed to rear?

Talk about it

1. What traits of the Godolphin Arabian might Whistlejacket have inherited?
2. If Sham could see this grandson, what would Agba be proud of?

HANDS-ON: SHAM'S JOURNEY MAP AND FAMILY TREE

Make two diagrams on one page: a map of Sham's journey in the story, and a family tree of the real Godolphin Arabian.

You will need

- A map of North Africa and Western Europe
- Paper, ruler, pencil and colored pencils

Steps

1. On the top half, sketch Morocco, Spain, France and England, with the Mediterranean Sea, the Atlantic Ocean and the English Channel.
2. Mark and label: Morocco (Sham's birth), Paris (the French court), London, Newmarket (the racecourse) and the Gog Magog Hills near Cambridge (where he died in 1753). Join them with a dotted line with arrows and title it "Sham's Journey (in the story)."
3. On the bottom half, draw a family tree going down the page: Godolphin Arabian (c. 1724) → sons Lath (1732), Cade (1734) and Regulus (1739).
4. Under Cade, add Matchem (1748), then three dots for the many generations, then Man o' War (1917), then Seabiscuit (1933, through his sire Hard Tack).
5. Off to one side, add another son, Mogul, and under him Whistlejacket (1749).

Check your work

- My map shows the countries, seas and five labelled places with a route.
- My family tree shows at least seven horses in the right order.
- Both diagrams have titles.

FIELD NOTEBOOK

1. **Field Notebook, Trail D, page 6.** Glue in or copy your journey map and family tree.
2. Write a paragraph: Agba could not speak. How did he show love and faithfulness? Then tell one fact about the real Godolphin Arabian and one part of the story that may be legend.

Did you know? The other two foundation sires were the Byerley Turk, a war horse said to have served in Ireland around 1689–1690, and the Darley Arabian, brought from Aleppo in Syria in 1704. Today most Thoroughbreds descend in the male line from the Darley Arabian; the Godolphin’s male line is rarer but lives on, notably through Man o’ War.

Map or diagram. A family tree that follows only the father’s line (sire to son to grandson) is called a sire line or tail-male line. Your tree is a sire line, but every horse in it also had a mother whose family mattered just as much.

Goes deeper in. History, “England in the 1700s,” Literature, “Historical Fiction,” and Life Science, “Heredity” (coming soon).

For families. Sources: National Horseracing Museum (Newmarket); Britannica; the National Gallery’s notes on *Whistlejacket*; Marguerite Henry, *King of the Wind* (in copyright; summarized, not quoted). The horse’s birthplace and early history are uncertain; the French royal gift and the water-cart story come from 18th- and 19th-century tradition. The book’s scenes in prison and on the streets are sad but not graphic.

PRACTICE

1. **EASY** What award did *King of the Wind* win, and in what year?
2. **EASY** Name the three foundation sires of the Thoroughbred.
3. **MEDIUM** What two omens did Sham carry in the story, and what did each mean?
4. **MEDIUM** The Godolphin Arabian was foaled about 1724 and died in 1753. About how old was he? How many years later was Man o’ War born (1917)?
5. **CHALLENGE** Give one fact about the Godolphin Arabian that we can trust and one part of his story we cannot be sure of. How do historians tell the difference?

Make it a game • Pedigree Line-Up. Write the horse names from the family tree on cards (Godolphin Arabian, Cade, Matchem, Man o’ War, Hard Tack, Seabiscuit, Mogul, Whistlejacket, Lath, Regulus). Shuffle and hand them out. Players race to line up in the right family order. Then switch cards and try again faster.

Scripture. “Seest thou a man diligent in his business? he shall stand before kings; he shall not stand before mean men.” (Proverbs 22:29, KJV)

In the story, a poor mute stable boy works faithfully year after year with no reward and at last stands before the great. Diligence in small, unseen work honors God, whether or not anyone notices.

Practice: answers

1. The Newbery Medal, in 1949.
2. The Byerley Turk, the Darley Arabian and the Godolphin Arabian.
3. A white spot on his heel, a sign of swiftness (good); a wheat-ear mark on his chest, a sign of evil (bad).
4. About 29 years old. Man o' War was born 164 years after his death (1917 – 1753).
5. Trustworthy: he was owned by the Earl of Godolphin, died at the Gog Magog Hills in 1753 and sired Lath, Cade and Regulus (recorded in stud books and racing records). Uncertain: that he was a gift to Louis XV or pulled a cart in Paris. Historians trust written records made at the time and are careful with stories first written down long after.

4.7 WALTER FARLEY'S THE BLACK STALLION

OBJECTIVES

- Tell how Walter Farley came to write *The Black Stallion* (1941) while still a student.
- Summarize the two halves of the story: the island and the race.
- Draw a labelled plot diagram (story mountain) of the book.

Warm-up. Shipwrecked on an island with a wild stallion who has never been ridden: what is the first thing you would do to win his trust? Write three steps in order.

Video slot. Video coming. How horses gallop: Eadweard Muybridge's Horse in Motion photographs (1878). Search approved channels (Library of Congress, Smithsonian, Stanford University, Kentucky Horse Park); preview first. (Clips from the 1979 film are copyrighted and include a frightening shipwreck scene; parents may preview before showing.)

KEY TERMS

plot

The chain of events in a story: a beginning, rising trouble, a high point, and an ending.

climax

The most exciting turning point of a story, when the main problem is decided.

stallion

A grown male horse that has not been gelded; stallions are often proud and hard to handle.

match race

A special race between just a few chosen horses, set up to decide which is best.

trust

Confidence that someone will not harm you. Alec earns the Black's trust slowly, by patience and kindness.

CORE IDEAS

Walter Farley was born on 26 June 1915 in Syracuse, New York, and grew up in New York City. His uncle worked with horses, and young Walter spent every spare hour around stables and racetracks. He began writing *The Black Stallion* as a high-school student in Brooklyn and finished it while studying at Columbia University. Random House published it in 1941, when he was 26. It was an instant success. Farley went on to write about twenty more Black Stallion books, plus the Island Stallion series, before his death in 1989.

The story opens at sea. Young Alec Ramsay is sailing home to New York from a visit to his uncle in India aboard a tramp steamer called the *Drake*. At a small Arabian port, men force a

magnificent, savage black **stallion** on board. Alec secretly brings him sugar. Then a storm wrecks the *Drake* off the coast of Spain. In the dark water, Alec catches hold of the stallion's rope, and the Black tows him to a small, empty island.

The first half of the book is a survival story. Alec finds water, lives on seaweed and wild fruit, and builds a shelter. When the Black saves him from a snake, Alec begins to win his **trust**, and at last, after many falls, he rides him. Patience, not force, does it. Farley describes the gallop along the beach as pure joy. Then a passing ship rescues them, and the Black comes home with Alec to Flushing, in New York City.

The second half is a racing story. A neighbor, Henry Dailey, is a retired jockey and trainer. He sees that the Black is a champion and secretly trains horse and boy at night at Belmont Park. Since no one knows the Black's pedigree, he cannot run in ordinary races. So when a **match race** is set in Chicago between the two fastest horses in America, Cyclone and Sun Raider, Henry gets the "mystery horse" added. Alec, still a boy, rides. At the start the Black is left behind, yet he runs down both champions and wins. That is the **climax**.

Why has the book lasted? It joins two great kinds of story, the castaway tale like *Robinson Crusoe* and the underdog race. Its heart, though, is friendship between a boy and a horse built on courage, patience and loyalty. A 1979 film of the book, with its long wordless island scenes, brought it to a new generation.

PICTURE STUDY



The Horse in Motion ("Sallie Gardner" at a Gallop), Eadweard Muybridge, 1878 · Photographs (a series of frames printed together on a card) · Library of Congress, Washington, D.C., and other collections
Wikimedia Commons · Public domain

For centuries painters argued about how a galloping horse moves its legs. In 1878 Eadweard Muybridge set up a row of cameras along a track in California, tripped one after another by

threads as the mare Sallie Gardner raced past. The photographs proved that at one moment in the gallop all four hooves leave the ground, tucked under the body. That is how the Black runs down Cyclone and Sun Raider.

Look closely

- Find the frame where all four hooves are off the ground. Where are the legs?
- Follow one hoof through the frames. How many frames does it take to come round again?
- Look at the rider. Does he move as much as the horse?

Talk about it

1. Painters of the past often showed galloping horses with legs stretched out front and back. Why did they get it wrong?
2. How could Muybridge's pictures help a writer like Walter Farley describe a race truthfully?

HANDS-ON: STORY MOUNTAIN FOR THE BLACK STALLION

Draw a plot diagram (a "story mountain") showing how *The Black Stallion* is built.

You will need

- A long sheet of paper, turned sideways
- Pencil, ruler and colored pencils

Steps

1. Draw a mountain shape: a slope rising from the left to a peak, then a shorter slope down on the right.
2. Label five points: Beginning (bottom left), Rising Action (up the slope), Climax (peak), Falling Action (down the slope), Ending (bottom right).
3. Write the events in order along the mountain: Alec on the *Drake*; the Black brought aboard; the shipwreck; life on the island; first ride; rescue; training with Henry at night; the Chicago match race (peak); the Black revealed as a champion.
4. Draw a small wave symbol beside the island events and a small horseshoe beside the racing events, and add a key.
5. Draw a dotted line down the middle labelled "Two halves: survival / racing."

Check your work

- My mountain has five labelled parts.
- At least eight events are in the right order.
- The climax is the Chicago match race, and my key explains the two halves.

FIELD NOTEBOOK

1. **Field Notebook, Trail D, page 7.** Glue in or copy your story mountain.
2. Write a paragraph comparing how Alec wins the Black and how Agba cares for Sham in *King of the Wind*. What do the two boys have in common?

Did you know? Farley later kept horses on his own farm in Pennsylvania and wrote in a studio near them. His son Steven continued the series after his death. The Black's story continues in *The Black Stallion Returns* (1945), where Alec travels to Arabia to learn where the Black came from.

Map or diagram. A story mountain fits many books. Try the same diagram with *Black Beauty* or *Misty*: is the climax easy to find, or does the story have several smaller peaks?

Goes deeper in. Literature, "Plot and Structure," and Life Science, "How Animals Move" (coming soon).

For families. Sources: Random House author pages; Britannica; Library of Congress (Muybridge). *The Black Stallion* is in copyright and is summarized, not quoted. The shipwreck is exciting and some passengers are lost, but it is not graphic. Farley's number of books is given as "about twenty" because counts differ depending on whether co-written and later titles are included. The 1979 film is rated G; preview the storm scene for young children.

PRACTICE

1. **EASY** What was the name of the ship that was wrecked?
2. **EASY** How old was Walter Farley when *The Black Stallion* was published?
3. **MEDIUM** Who is Henry Dailey, and why does he train the Black at night?
4. **MEDIUM** What did Muybridge's 1878 photographs prove about a galloping horse?
5. **CHALLENGE** The book has two halves. Name each kind of story and explain what joins them together.

Make it a game • Muybridge Flip Book. On the corners of 12 small cards or sticky notes, draw a simple stick horse, moving its legs a little on each card, with one card showing all four legs tucked up. Stack and flip them fast. Whose horse gallops most smoothly? Trade and race your flip books.

Scripture. "An horse is a vain thing for safety: neither shall he deliver any by his great strength." (Psalm 33:17, KJV)

The Black's strength is a gift, and in the story it carries Alec through the sea. Yet the psalm reminds us that no horse, however fast, is our true safety. Verse 18 goes on: "Behold, the eye of the LORD is upon them that fear him."

Practice: answers

1. The *Drake*.
2. 26 (born 1915, published 1941).
3. A retired jockey and trainer, Alec's neighbor. He trains at night in secret because the Black has no known pedigree and they want to keep him hidden until the race.
4. That at one moment in the gallop all four hooves are off the ground, tucked under the body (not stretched out front and back).
5. The first half is a survival (castaway) story; the second is a racing (underdog) story. They are joined by the friendship and trust between Alec and the Black, which begins on the island and makes the race possible.

4.8 WRITE AND ILLUSTRATE YOUR OWN HORSE STORY

OBJECTIVES

- Use four tools learned from the authors on this trail: research, point of view, a story mountain and true detail.
- Plan a horse story with a setting map and a six-panel storyboard.
- Write and illustrate a short horse story of about 600–1,000 words.

Warm-up. Look back over your Field Notebook pages for this trail. Which author would you most like to write like: Anna Sewell, Marguerite Henry or Walter Farley? Write one sentence saying why.

Video slot. Video coming. How to draw a horse step by step (shapes, proportions, legs in motion). Search approved channels (Art for Kids Hub, a museum education channel such as the National Gallery of Art, Kentucky Horse Park); preview first.

KEY TERMS

point of view

Who tells the story. First person uses “I” (as Black Beauty does); third person uses “he,” “she” or “they” (as in *Misty*).

storyboard

A row of boxes with quick sketches showing the main scenes of a story in order, used to plan a book or film.

setting

Where and when a story happens.

draft

A first try at writing. Good writers write a draft, then revise it.

revise

To read a draft again and make it better: clearer, truer and more alive.

CORE IDEAS

You have now met three writers who changed how the world sees horses. Each one used a tool you can borrow. Anna Sewell chose a surprising **point of view**: she let the horse tell his own story in the first person, so readers felt what he felt. Marguerite Henry did **research**: she traveled to Chincoteague, met the real family, and even bought the real pony. Walter Farley built a strong **plot**: a problem, rising danger, a thrilling climax and an ending that satisfies. And in *King of the Wind*, Henry joined true history with imagination.

Begin with the horse. Is it a pony, a draft horse, a racehorse, a cab horse, a wild mare? Give it a name, a color, markings and a temper. Then give your main character, horse or person,

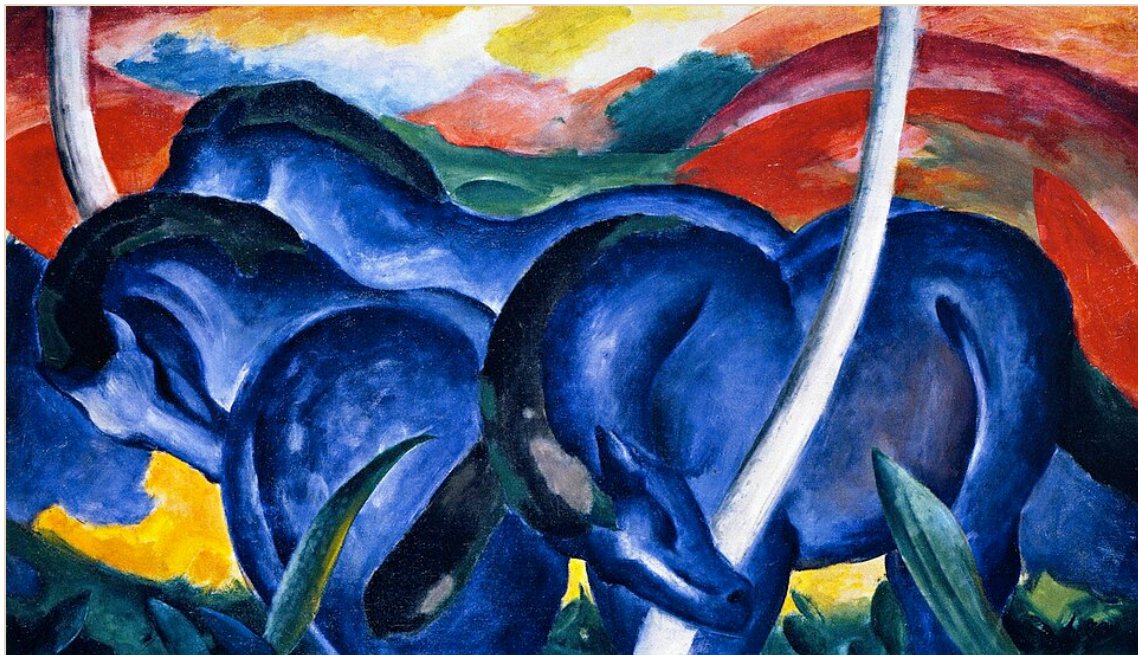
something to want: freedom, a home, a race to win, a friend to save. A story begins when someone wants something and something stands in the way.

Next choose your **setting**. It may be a real place you have researched, like a farm, a beach, a city street in 1880 or a cattle drive in 1870, or a place you invent. Draw a map of it before you write. Writers from Robert Louis Stevenson, who drew the map for *Treasure Island* before writing the book, to modern authors have found that a map helps a story hold together.

Now plan with a six-panel **storyboard**: (1) the horse and its world; (2) the problem arrives; (3) a first try that fails; (4) things get worse; (5) the climax, the moment of greatest courage or danger; (6) the ending, showing how things have changed. Write your **draft** quickly, then put it away for a day. When you **revise**, check your horse facts: does a horse really do that? Is a 13-hand animal a pony? Do the gaits come in the right order, walk, trot, canter, gallop? Add true details: the smell of hay, the creak of leather, the thud of hooves.

Finally, illustrate. The books on this trail were famous for their pictures as well as their words. Wesley Dennis drew Misty and Sham, and many artists have illustrated *Black Beauty*. You do not need to draw perfectly. Start with simple shapes: an oval body, a smaller oval for the chest and hindquarters, a wedge for the head, and lines for the legs, then fill in. Illustrate at least three scenes, including the climax. Good stories also tell the truth about right and wrong. Let kindness be honored in your story, as it is in every book on this trail.

PICTURE STUDY



The Large Blue Horses, Franz Marc, 1911 · Oil on canvas · Walker Art Center, Minneapolis
Wikimedia Commons · Public domain

Franz Marc was a German painter who loved animals, especially horses. He did not paint them in their real colors. He chose colors to show feelings and ideas; he linked blue with the

spiritual and the strong. Look at how the round shapes of the horses echo the rolling hills behind them. Marc died in 1916 while serving as a soldier in the First World War.

Look closely

- Count the horses. Where does one end and the next begin?
- Find curves in the horses that repeat in the hills.
- Which colors are warm and which are cool? Where did Marc put each?

Talk about it

1. Why might an artist paint a horse blue? What color would you choose for your story's horse, and why?
2. How is this picture different from Stubbs's *Whistlejacket*? Which would better illustrate your story?

Safety first. If you draw a real horse from life, do it from outside the fence with an adult and the owner's permission. Stay out of the kicking zone behind the horse, and never feed it without asking the owner.

HANDS-ON: MY HORSE STORYBOOK

Plan, write and illustrate a short horse story and bind it into a little book. This is the final project of Trail D and may take two or three sessions.

You will need

- Lined paper for drafts and plain paper for the final book
- Pencil, eraser, colored pencils or watercolors, and a fine black pen
- A stapler, or a hole punch and yarn, to bind the book
- Your Field Notebook pages from this trail

Steps

1. Plan your horse: name, breed or type, color, markings and temper. Plan your main character's want and the problem in the way.
2. Draw a labelled map of your setting with at least five places (for example: barn, pasture, creek, town, racetrack) and a compass rose.
3. Fold a sheet into six boxes for a storyboard. Sketch and caption the six parts: world, problem, first try, worse, climax, ending.
4. Choose a point of view (first person, as the horse or a person, or third person). Write your draft, about 600–1,000 words.
5. Revise: check three horse facts, add three sense details, and fix spelling. Copy your story neatly, leaving room for pictures.
6. Illustrate at least three scenes, including the climax. Make a cover with a title, your name as author and illustrator, and the year. Bind the book.

Check your work

- My book has a setting map and a six-panel storyboard in my notebook.
- My story has a clear problem, a climax and an ending, with a chosen point of view.
- I checked at least three horse facts and included at least three illustrations and a cover.

FIELD NOTEBOOK

1. **Field Notebook, Trail D, page 8.** Glue in your setting map and storyboard.
2. Write a paragraph: Which tool from this trail (point of view, research, story mountain, or history with imagination) helped your story most, and how did you use it?

Did you know? Anna Sewell spent about six years on *Black Beauty*, much of it in bed. Walter Farley started *The Black Stallion* in high school and took several years to finish it. Good stories are rarely written in a day, so be patient with your draft.

Map or diagram. A six-panel storyboard matches the story mountain from Stop D7: panels 1–2 are the beginning, panels 3–4 the rising action, panel 5 the climax, and panel 6 the falling action and ending.

Goes deeper in. Literature, “Writing Stories,” and Art, “Drawing Animals” (coming soon).

For families. This is the trail’s portfolio piece. Let the child choose the story; give help with spelling and binding but keep the words theirs. A younger sibling can dictate a story while the Ranger illustrates. The Stevenson map anecdote is from his own essay “My First Book: Treasure Island” (1894). Franz Marc’s painting entered the public domain long ago; the Wesley Dennis illustrations mentioned are still in copyright and should be viewed in library copies.

PRACTICE

1. **EASY** Which point of view does *Black Beauty* use, and how can you tell?
2. **EASY** Name the six storyboard panels in order.
3. **MEDIUM** A writer says her heroine rode a 13.2-hand horse at a gallop, then slowed to a canter, then to a trot. Is anything wrong?
4. **MEDIUM** Your story is 840 words long, and you want 6 pages of words. About how many words go on each page?
5. **CHALLENGE** Rewrite this flat sentence with at least two true sense details: “The horse ran across the field.”

Make it a game • Story Relay. Sit in a circle. The first player gives a horse a name and a color. Each player adds one sentence, following the storyboard: world, problem, first try, worse, climax, ending. After six turns, start a new story. Bonus point for anyone who slips in a true horse fact.

Scripture. “My heart is inditing a good matter: I speak of the things which I have made touching the king: my tongue is the pen of a ready writer.” (Psalm 45:1, KJV)

“Inditing” means composing. The psalmist wrote with a full heart to honor the King. Our stories can do the same when they are well made, true to God’s world, and honor kindness, courage and faithfulness.

Practice: answers

1. First person; the horse tells the story using “I.”
2. The horse and its world; the problem arrives; a first try that fails; things get worse; the climax; the ending.
3. A 13.2-hand animal is a pony, not a horse (under 14.2 hands). The order of slowing down (gallop, canter, trot) is correct.
4. 140 words per page ($840 \div 6$).
5. Sample: “The bay mare thundered across the wet pasture, mud flying from her hooves, her breath steaming in the cold morning air.” Any answer with two accurate sense details (sound, sight, smell, touch) is right.

TRAIL 4 BADGE QUIZ

The badge quiz is optional. The student answers in writing, in full sentences where a sentence is needed. Four right out of five earns the first badge; four right out of six earns the second. Badges and the certificate are earned by doing the stops, not by scores.

Badge quiz 1 (Stops 1-5)

1. Why did Anna Sewell depend on horses, and what did she say was the aim of *Black Beauty*?
2. What was a bearing rein, and why was it cruel?
3. Write Proverbs 12:10 and name one law of Moses that protected working animals.
4. How did Marguerite Henry research *Misty of Chincoteague*, and what hard choice does Paul make at the end?
5. Why do the ponies swim at slack tide, and why are foals sold each year?

Badge quiz 2 (Stops 6-8)

6. Name the three foundation sires of the Thoroughbred.
7. Give one known fact and one legend about the Godolphin Arabian.
8. What are the two halves of *The Black Stallion*, and what is the climax?
9. What did Muybridge's 1878 photographs prove?
10. What is point of view? Which point of view does *Black Beauty* use?
11. Name the five parts of a story mountain in order.

TRAIL CERTIFICATE: MY HORSE STORYBOOK AND TRAIL D CERTIFICATE

Bind your Stop D8 horse story as a finished book with a cover, your name as author and illustrator, and the date.

Add a back page, "Behind My Story," listing your setting map, your storyboard and three horse facts you checked.

Gather your eight Field Notebook pages for Trail D (maps, diagrams and paragraphs) and put them in order behind the book.

Read your story aloud to your family. When it is done, a parent signs the Trail D certificate.

- **Story:** The story has a clear problem, a climax and an ending, with a consistent point of view, and honors kindness and courage.
- **Accuracy:** Horse facts (size, gaits, care, behavior) are correct, and the notebook paragraphs use real names and dates from the trail.
- **Maps and diagrams:** The setting map, storyboard and trail diagrams are neat, labelled and include keys or titles.
- **Illustration and craft:** At least three illustrations and a cover; the book is revised, neatly copied and bound.

Answer key

1. She was lamed by an injury to both ankles at about 14 and could not walk far. Her aim was "to induce kindness, sympathy, and an understanding treatment of horses."
2. A strap from the bit to a hook on the harness that held the horse's head high for fashion. It kept the horse from lowering its neck to pull, causing pain in the mouth and neck.
3. "A righteous man regardeth the life of his beast: but the tender mercies of the wicked are cruel." Any one: Sabbath rest for ox and ass (Exodus 23:12); do not muzzle the ox (Deuteronomy 25:4); help lift a fallen donkey (Exodus 23:5).
4. She visited Chincoteague for Pony Penning in 1946, met the Beebe family and bought the real Misty. Paul sets the Phantom free to return to her wild herd.
5. The water barely moves at slack tide, so the current is safest. Foals are sold to keep the herd at about 150 so the island is not overgrazed, and to raise money for the fire company and the ponies' care.
6. The Byerley Turk, the Darley Arabian and the Godolphin Arabian.
7. Fact (any one): owned by the Earl of Godolphin; died at the Gog Magog Hills near Cambridge in 1753; sired Lath, Cade and Regulus. Legend (any one): he was a gift to King Louis XV; he pulled a water cart in Paris.
8. A survival story on the island and a racing story in America. The climax is the Chicago match race against Cyclone and Sun Raider.
9. That at one moment in the gallop all four of a horse's hooves are off the ground, tucked under the body.
10. Point of view is who tells the story. *Black Beauty* uses the first person: the horse tells it as "I."
11. Beginning, rising action, climax, falling action, ending.