IMAX®

HORSES

THE STORY OF EQUUS

A Comprehensive Educator's
Resource Guide

Lessons and activities to help you bring
the fascinating story of horses
into your classroom

Six thousand years ago...

we domesticated horses and brought them back from the edge of extinction. There are now more than 60 million in the world. *Horses: The Story of Equus* is the story of three very different horses.

On a warm spring night, three foals are born. Among the tens of thousands that will enter the world this year, these three are destined for unpredictable lives.

The Chestnut filly will take the long, hard road of work and training to become a racehorse. The Bay colt will enter the grueling world of eventing, only to fail, then find his true home in the movies. And the Black colt will be lost to humans forever, when he escapes to join the herds that live in the mountain wilderness.

For sixty centuries, we have ridden on the backs of horses as their strength and willingness changed the course of civilizations across the world. Now, they depend on us for their survival. With art, science, and drama, *Horses: The Story of Equus* shows why this is a debt we owe to the noblest animal of them all.

A Message to Educators

Congratulations on selecting a spectacular and awe-inspiring educational experience for your students. The technology behind IMAX® films brings subject matter to life. With screens up to eight feet tall, crystal-clear pictures, and surround sound, you don't just watch an IMAX film—you experience it. Since the very beginning, IMAX has been dedicated to education, providing educators' guides, such as this one, free to teachers who bring students to an IMAX film.

Horses: The Story of Equus is the perfect film to incorporate into your classroom curriculum. The fascinating topic, the relationship between horse and human, leads to lessons that touch upon a variety of subjects. IMAX has joined forces with the educational experts at Weekly Reader to create this comprehensive educator's resource guide. The guide was designed to educate students on the rich history of the horse, the horse's unique relationship with humans, its remarkable biology, and its powerful influence on the course of human civilization. This program features a set of standards-based lessons for students in grades 2 to 4 and another set for students in grades 5 to 9, as well as background information; directions for preparation, presentation, and evaluation; and a resource list. Since the reproducible activities have been designed for students with a wide range of abilities, you may adapt them to meet the needs of your students. Extension activities have been created for each grade range. You may wish to adapt ideas from other grade brackets and incorporate them into your lessons as well.

We hope you and your students enjoy bringing the magic of the IMAX film *Horses: The Story of Equus* into your classroom. Although these materials are copyrighted, they may be reproduced for educational purposes. Please feel free to share this resource guide with your colleagues and encourage them to book field trips to *Horses: The Story of Equus*.

We look forward to seeing you and your students again at your local IMAX Theatre for the next educational IMAX film.

IMAX®

HORSES

THE STORY OF EQUUS

Table of Contents

Educational Standards

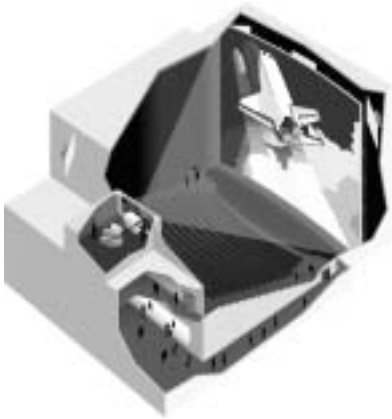
All activities comply with U.S. National Science Education Standards, which can be found online at: **http://books.nap.edu/books/0309053269/html/103.html**.

The activities also comply with U.S. Language Arts Standards, which can be found online at: **www.ncte.org/standards/standards.shtml**.

The IMAX Experience®

With breathtaking images up to eight stories high and wrap-around 12,000-watt digital sound, The IMAX Experience takes you to places only imagined. The topics of IMAX® films are varied, but one element is constant: IMAX films take viewers on a close-up, multisensory ride to another world. Whether it's the dark, vast world of outer space or the intricate and diverse world of horses, viewers are able to go where they otherwise could not. The highly specialized and precise projectors employ a unique system that ensures outstanding clarity and brightness. The IMAX Experience is completed by a specially designed sound system, ensuring that each viewer receives the same sound quality. Only IMAX technology lets you feel as if you're really there.

Over 700 million people around the world have been spellbound by the force and beauty of The IMAX Experience. Technically advanced and visually stunning, The IMAX Experience continues to be the world's most immersive theatre entertainment.



Giant Screen – Giant Format
Every seat is the best seat in the house.

Education that Entertains

The IMAX® camera can weigh as little as 42 pounds or as much as 100 pounds.

IMAX films are designed to educate and enlighten as much as they are to entertain. They offer educators a powerful teaching tool that is easily integrated into existing curriculum. And they provide students with unique and exciting opportunities to explore new worlds and new ideas.

IMAX films focus on a broad range of subjects covering the environment, nature, geography, the arts, technology, and space exploration, to name a few.

In addition to meeting recognized educational standards, IMAX films and education programs are often produced in collaboration with prestigious organizations, including the Smithsonian Institution, NASA, WGBH/Nova, National Geographic, Discovery, and Weekly Reader.

Visit the IMAX Web site for more information about The IMAX Experience, IMAX technology, films, and theatres at **www.IMAX.com**.

How Does IMAX® Work?

IMAX advanced technology – cameras, film, projectors, screens, and sound – all work together perfectly to immerse you in The IMAX Experience®.

The world's most powerful film projection system

- **IMAX uses 15-perforation, 70mm film to shoot and project images of incredible sharpness. The 15/70 frame is 10 times larger than the 35mm used in regular theatres and three times larger than standard 70mm film used in classic Hollywood epics. This makes it the largest commercial film ever invented.**
- **IMAX cameras are specifically designed to shoot 15/70mm film. Weighing between 42 and 100 pounds, these cameras are extremely versatile and can be used in virtually any environment. Imagine lugging one around to film a racehorse!**
- **IMAX projectors are the most powerful in the world. The key lies in the Rolling Loop technology, which advances the 15/70 film in a wave-like motion at 24 frames per second. During projection, each frame is positioned on fixed registration pins and a vacuum holds the film flat against the rear lens element.**
- **The IMAX Proportional Point Source™ sound system is three times more powerful than a regular theatre sound system.**
- **IMAX screens can be up to eight stories high. These huge IMAX flat screens are painted silver to reflect the maximum amount of light back to the audience. They are also perforated with thousands of tiny holes to allow the crystal-clear sound to flow through freely.**
- **The beam of light from an IMAX projector is so bright, it can be seen from the surface of the moon.**

35mm

70mm

IMAX® 15/70

About the Film

Horses: The Story of Equus is a wonderful example of how IMAX technology brings images to life, with an up-close view of the horses' physical features and beautiful scenic backgrounds. Share these facts about the making of the film with your students.

- **It took one year to make *Horses: The Story of Equus*.**
- **The film was shot in southeastern Australia.**
- **Professional horse trainers were hired to help with the film.**
- **A 70-piece orchestra was used to create the film's soundtrack.**
- **To film the racehorses, the cameramen had to drive alongside them and match their 30-mph speed.**
- **The most difficult scene to plan was the barn fire. First, horses don't like fire. Second, the filmmakers only had one chance to film it — the barn burned completely.**
- **Some of the challenges the crew faced were weather issues and the fact that they had to send the film 6,000 miles away to be processed. They had to wait a few days to see their work.**
- **If you rolled this IMAX film off its reel, it would be about 5 miles long.**
- **This IMAX film weighs about 500 pounds. A videocassette only weighs about 10 ounces.**

Background Information

Modern horses evolved around 2.5 million years ago and are known scientifically as *Equus caballus*. The species can be traced back 60 million years and many climate and terrain changes ago to *Eohippus*, a fox-sized, shrub eater that lived in jungle-like terrain in what is now North America. About one million years ago, wild horses were found all over North America and had spread to Asia and Europe by crossing the Bering Strait, a land bridge between Alaska and Asia. Then, about 10,000 years ago horses disappeared completely from the Americas and did not return until European explorers brought them back in A.D. 1494.

Scientists are not sure why horses became extinct in the Americas, but they name climate changes and excessive hunting by humans as probable factors. Climate changes were also to blame for a mass migration of horses from Europe to Central Asia between 10,000 and 6,000 years ago.

Horses have had a huge effect on humans' ability to develop civilizations and to progress. The mutually beneficial relationship between horses and humans can be traced back to the Ukraine, where horses were first domesticated 6,000 years ago. In return, it appears from fossil records that after horses were domesticated in Central Asia, their population came roaring back. Horses have not been in danger globally since their domestication.

It was in the widely varied climates of Europe and Asia that the many breeds of horses developed, each suited to a particular environment and function. (All breeds are of the species *Equus caballus*.) Breeds vary widely, from the sleekest racehorse to the stocky muscular workhorses. Today, horses are bred for specific function and are generally tracked carefully. For example, all thoroughbred horses in the world today descend from three stallions. The horses that make up undomesticated, or free-roaming, herds today are all descendants from domesticated horses that escaped. The last of the true wild horses, known as Przewalski's horse, died out in the 1960s in Mongolia.

Whatever the breed, horses have been a very important part of everyday life for people all over the world. For thousands of years, horses have enabled people to travel and haul loads great distances, to work farms, raise cattle, make deliveries, and fight wars, just to name a few. It wasn't until the first automobile was widely available that horses began to become less of a necessity of life and more of a pleasure, at least in some parts of the world.

In many less developed and rural parts of the world, horses are still integral to survival, as they have been for 6,000 years. Their adaptability to life with humans, their need to bond, and their unique physical form have ensured their place in the hearts and history of virtually every civilization.

Interesting Facts about Horses

Share these facts with your students and see if they can add more.

- **Male horses are called *stallions*; females are *mares*; newborns are *foals*; young males are *colts*; and young females are *fillies*.**
- ***Gait* refers to the manner of the horse's movement. At their slowest to fastest gaits, horses *walk*, *trot*, *canter*, and then *gallop*.**
- **Horses are herd animals — they instinctively need to be with others, whether horse or human. This is partly for self-protection.**
- **Curious, nonterritorial, nonaggressive, and given to flight. These words and phrases describe a horse's nature.**
- **Horses eat grass, hay, and *feed* (grain).**
- **One year in a horse's life is equal to about three human years.**
- **Horses, like humans, understand dominance and submission. They will decide whom they trust and whom they will submit or give in to — such as the Bay that does not cooperate with the event rider, but does with the film trainer. Horses form bonds.**
- **Trust is key to horses. For example, horses can't look down when they jump so they need to trust their trainers and riders to get them over obstacles.**
- **Horses are measured in *hands*. One hand equals 4 inches. 16 hands equal 64 inches (or 5.33 feet).**
- **Color and markings are important in determining the value of a horse.**
  - **Bay horse — brown hair with some shades of red; black tail and mane**
  - **Black horse — all black hair**
  - **Chestnut horse — brown hair with some shades of red; same color (or lighter) tail and mane**
- **Average height: about 5.5 feet at the shoulder. Length: about 9 feet (nose to tail). Weight: 120 to 2,000 pounds.**

Section One: *Grades 2–4*

TEACHER INFORMATION

ACTIVITY ONE: Born to Bond

This activity uses the study of horses and their relationship with humans as an opportunity to examine evolution, adaptability, and luck in the development of a species.

OBJECTIVES

Upon completing this activity, students will be able to:

- **identify some of the characteristics of the horse that contributed to its successful domestication.**
- **compare the horse's adaptability to domestication to that of the dog's and the tiger's.**
- **differentiate between those characteristics that are instinctual (internal) to the horse and those that horses derive from experience (external).**

PREPARATION AND PROCEDURE

Make a copy of the reproducible activity sheet on page 7 for each student. Obtain several sources of basic information for each of the three topics: dog, horse, and tiger. (See the Resource List on the inside back cover for suggestions.)

Begin this activity by discussing the film. Explain the term *domesticated* (tamed, trained to live with humans). Ask students to think about parts of the film that showed why horses are good companions for humans. (For example, the Bay is driven to bond with his trainer in the absence of other horses.) Then encourage students to discuss why dogs make good pets. Next, discuss the appropriateness of a tiger as a domesticated companion. Keep track of students' ideas. Explain to students that they will be filling out a chart comparing the three animals. Next, distribute the activity sheet. Instruct students to read the facts about each animal and to categorize them on the chart as helpful or not helpful for domestication. This can be done as a class, in small groups, or individually.

When students have completed the chart, explain the difference between *instinctual* and *learned* behaviors. Instinctual behaviors are those that come naturally, such as pulling your hand away from a hot surface. Behaviors that come from experience are learned, such as looking in both directions before crossing a street. Ask students to place an *I* next to the characteristics that they think are instinctual and an *E* next to those that come from experience.

EVALUATION — Answers:

Dog
- **Helpful: likes to be with a group; each group has an order with a leader and followers; smaller size; likes to play**
- **Not helpful: territorial, can be aggressive when challenged or frightened**

Horse
- **Helpful: likes to be with a group; each group has an order, with a leader and followers; eats a variety of different foods**
- **Not helpful: easily distracted, prone to flight, doesn't naturally jump, size**

Tiger
- **Helpful: simple digestive system**
- **Not helpful: carnivore, size, predator, territorial, solitary, sharp and strong teeth**

ACTIVITY TWO: The Nuts and Bolts of Colts (and Fillies, too)

This two-part activity includes a maze and multiple-choice questions to explain the stages of a horse's life.

OBJECTIVES

Students will be able to:

- **process a visual representation into facts.**
- **identify the key elements and periods in the life cycle of a horse.**

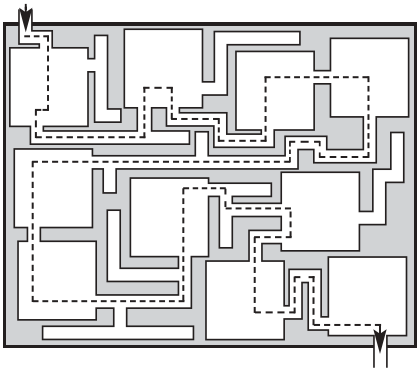
PREPARATION AND PROCEDURE

Make a copy of the reproducible activity sheet on page 8 for each student. Then begin this activity by inviting students to share what they know about how a horse is born and how it grows. Discuss the early and final scenes in the film showing a foal just after its birth. Ask whether anyone has witnessed a horse birth or has any stories relating to the event. Distribute the activity sheet. Explain to students that they are to complete the maze, making sure to pass by each illustrated milestone in a horse's life in the correct order.

After students complete the maze, have them move on to Part 2, in which they answer multiple-choice questions based on the information in the maze.

EVALUATION — Answers:

Part 1:



Part 2: **1.** b, **2.** c, **3.** a, **4.** c, **5.** c, **6.** b

Section One: *Grades 2–4*

TEACHER INFORMATION

ACTIVITY THREE: Form and Function

In this activity, students investigate the specialized functions of a horse's anatomy.

OBJECTIVES

Students will be able to:

- **match a horse's physical characteristics to their functions.**
- **understand that each part of the body is specialized.**

PREPARATION AND PROCEDURE

Make copies of the activity sheet on page 9 for students. Begin this activity by discussing what students noticed about the horses' bodies in the film. Ask students what purpose they think each feature serves. Explain that this is a *function*. For example, why are a horse's eyes on the sides of its head? (for maximum peripheral vision) Distribute the activity sheet and instruct students to study the diagram and then match the labeled features with their function from the list at the bottom of the page.

EVALUATION — Answers:

1. E, **2.** D, **3.** F, **4.** H, **5.** B, **6.** C, **7.** G, **8.** A

ACTIVITY FOUR: Horse: Humans' Best Friend

In this activity, students consider the serious question of where humans would be without the horse.

OBJECTIVES

Students will be able to:

- **identify the key areas throughout history in which horses had a major effect on human life.**
- **identify important roles horses play in humans' lives today.**

PREPARATION AND PROCEDURE

Obtain a selection of books from the Resource List for classroom research. Make copies of the activity sheet on page 10 for students.

Introduce this activity by asking students for ideas about the roles that horses have played in history. Possible answers include working with cattle, plowing fields, and assisting police. Distribute the activity sheet and explain to students that they are going to create a résumé for the horse, listing and describing as many jobs as they can think of, both from the past and the present. Allow students access to the research materials. After students complete the résumé, invite them to select one of the jobs and to consider how a horse could perform the work. Students can use the back of the paper to write their ideas.

EVALUATION — *Answers will vary, but may include:* used for wartime (cavalry, reconnaissance, supply, medical vehicles), travel (carrying riders; pulling stagecoaches, cabs, wagons, streetcars, and delivery vehicles), hunting, chariot races, industrial horsepower (in mines and factories), ceremonies, pulling barges on canals, performing farming duties (preparing the land, planting, harvesting, and making deliveries), mail delivery, or assisting police and firefighters.

Extension Activities

Extensions to Activity 1

- **In the film *Horses: The Story of Equus*, the Bay becomes a stunt horse working in the movies. The motion picture industry owes a large debt to horses. Some of the most famous pairs in movies have been man (or woman) and horse. The horse's heyday in films was the 1930s through the 1950s. Encourage students to interview a grandparent or other person who may recall those films. Students might ask:**
  - **How important were horses in these movies?**
  - **What were some of the classics or favorites?**
  - **What types of stunts did the horses do?**
- **Have students compare the ox, another work animal, with the more versatile horse using a Venn diagram to illustrate similarities and differences. For example, the ox is slow. It is a ruminant, which means that it must rest after it eats. It needs to pasture close to its food source. The horse has smooth, faster movements. It can eat and run. Discuss the effect these differences have had in farming.**
- **In history, the horse was the first means of linking two geographic areas. Horse-drawn stagecoaches made travel easier and faster. Have students investigate how the horse affected the growth of cities (e.g., helped increase trade), and the role horses played in the development of railroad and canal systems.**

Extension to Activity 2

- **Horses have very distinctive group behavior, beyond their need to bond. Research the kind of family group horses usually create. Why does this organization work so well? For example, horse groups have a dominant horse, as we see in the film when the Black colt tries to join a group. All three horses bond first with the mother, then with other foals, and eventually they form adult bonds depending on their situation—either with other horses, with humans, or even other kinds of animals. How does this compare with human families and other animal families?**

Extension to Activity 3

- **The Chestnut filly in the film *Horses: The Story of Equus* becomes a racehorse. As we learn in the film, horse racing started soon after one inspired man decided to ride a horse. When another man copied him, horse racing began. Horse racing remains a popular pastime in many parts of the world. See the Resource List for suggested reading to learn more about the history and kinds of horse racing.**

Extensions to Activity 4

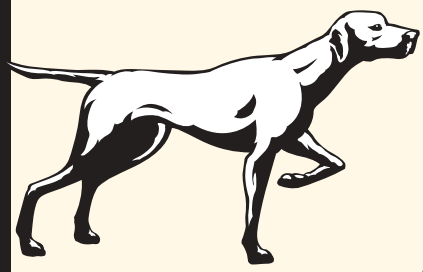
- **Explore the rich narrative associated with horses. Select from a list of age-appropriate literature featuring horses and read them with the class. (See the Resource List on the inside back cover for suggestions.)**
- **In the 1920s, the tractor began taking over the work of the horse. Have students imagine they are farmers at that time. They should compare the costs and benefits of buying a tractor *vs.* keeping the horse.**

Name: _____

Why was the horse able to be *domesticated*, or trained to live with and be useful to humans? Throughout history, we've tried to tame many animals, but we've learned that some animals do not make good pets. For example, have you ever seen a pet hyena? Use the information from the fact cards to fill in the chart. Decide whether you think each fact would be helpful or not helpful in training the animal to live at someone's house.

DOG

- likes to be with a group
- group has a leader and followers
- territorial (protects home)
- smaller size
- can be aggressive when challenged or frightened
- likes to play



HORSE

- likes to be with a group
- each group has an order with a leader and followers
- eats a variety of different foods
- easily distracted
- prone to flight
- doesn't naturally jump
- large size

TIGER

- predator (hunter)
- solitary (likes to be alone)
- carnivore (eats meat)
- medium size
- has sharp and strong teeth
- simple digestive system
- territorial

ANIMAL	*Helpful with domestication*	*Not helpful with domestication*
DOG		
HORSE		
TIGER		

THE NUTS AND BOLTS OF COLTS (and Fillies, too)

Activity 2

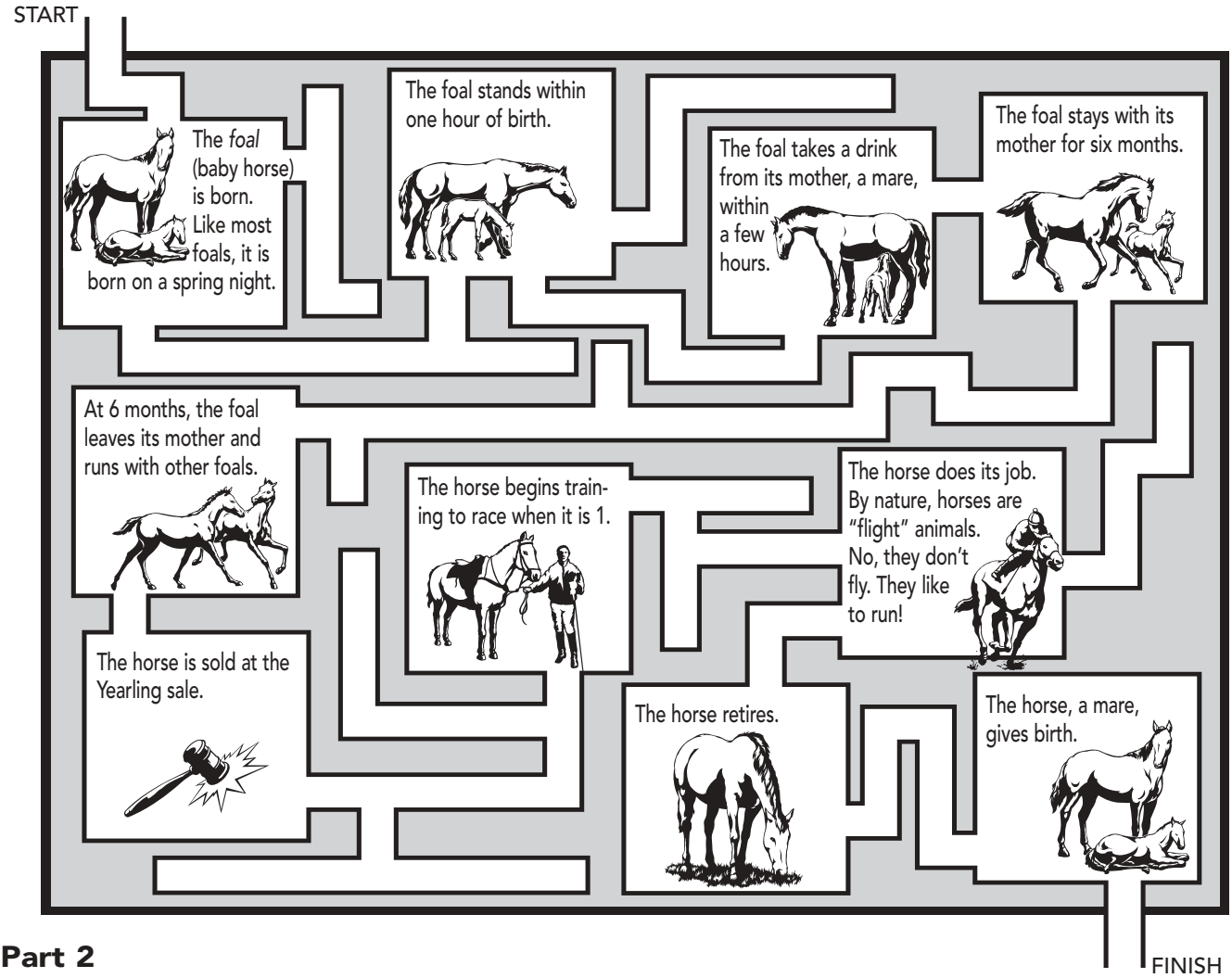
Grades 2–4

Name:

Part 1

Each species in nature has its own unique life cycle. We walk after about one year. We stay with our families for almost twenty years. A horse's life cycle is quite different from a human's.

Do you remember the Chestnut horse from the film *Horses: The Story of Equus*? Can you help her figure out the right way through the maze using the pictures and information given?



Part 2

Use the information from the maze and the film to answer these questions. Circle your answers.

1. Foals are usually born in the spring because
a. the flowers are blooming.
b. there is fresh grass.
c. the days are longer.

2. Foals can stand within
a. one month.
b. one week.
c. one hour.

3. A foal is protected by its mother for
a. six months.
b. one year.
c. two years.

4. Horses begin training
a. at birth.
b. at 6 months.
c. at 1 year.

5. A foal usually drinks from
a. a bottle.
b. a straw.
c. its mother.

6. Based on what you know about a horse's life cycle compared with a human's, which species do you think lives longer?
a. horse
b. human

FORM AND FUNCTION

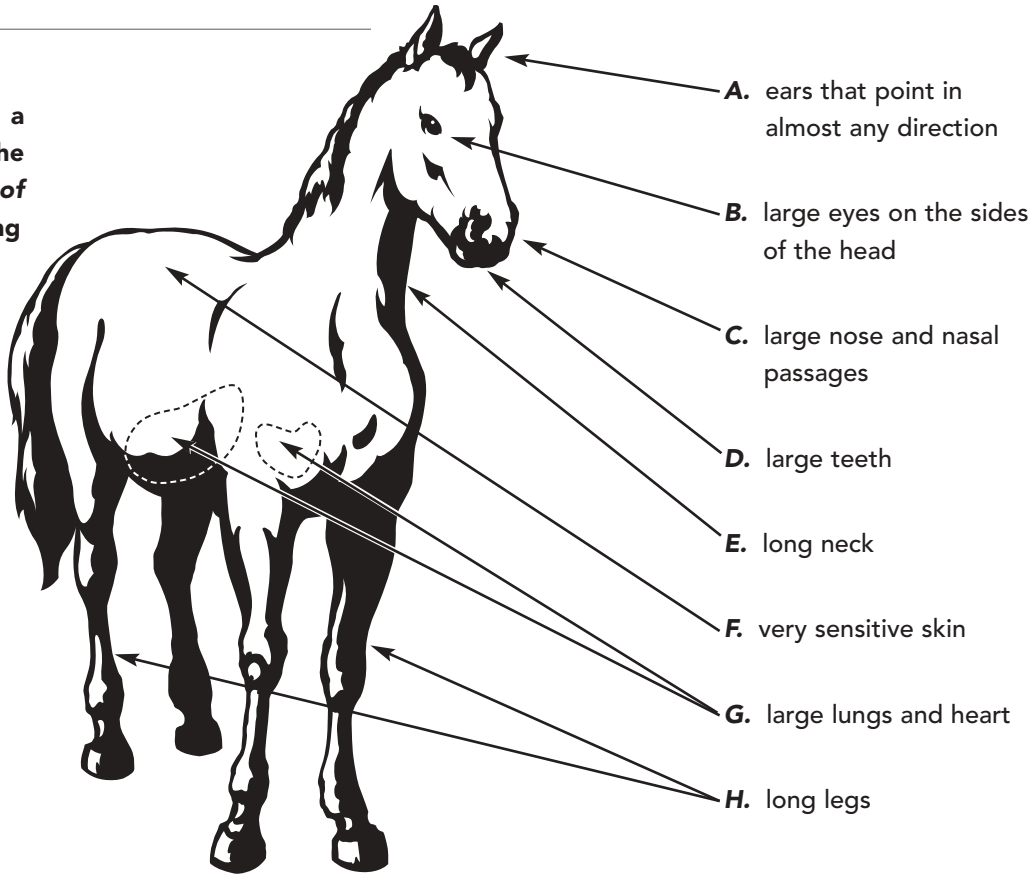
Activity 3

Grades 2–4

Name: _____

Form

Even if you have never seen a horse up close, after seeing the film *Horses: The Story of Equus*, you know how amazing a horse's body is. Each part of the body serves a special purpose. This diagram shows some of the specialized parts of a horse's body, each labeled with a letter.



Function

Study the diagram. Then, using what you've learned, match each body part with its function by writing the letter on the line provided.

1. A horse can reach food on the ground and look around from above without much effort. _____

2. A horse can chew the toughest grass, enabling it to survive where other animals could not. _____

3. A horse can sense the slightest muscle movement of a rider, which makes it seem as though the horse can read the rider's mind. It can also sense sound through its hoofs and legs. _____

4. A horse can take long strides (steps) to run fast. _____

5. A horse is very alert to its surroundings. It can see in almost every direction, including behind itself, without moving its head. _____

6. A horse has an excellent sense of smell. It uses smell to identify itself and others. _____

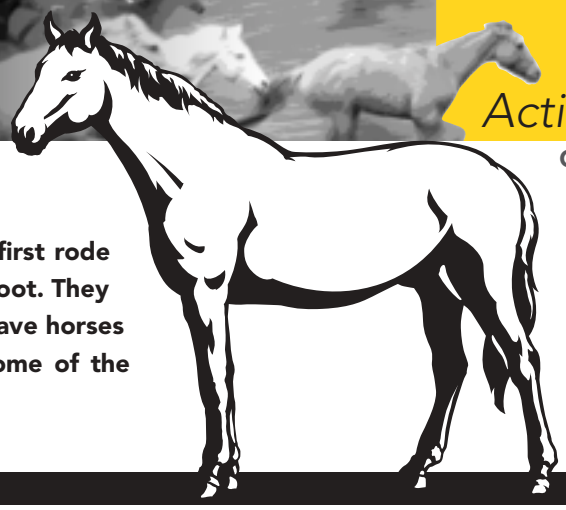
7. Even though it's so large, a horse can run fast and long because it can breathe a lot of oxygen and pump a lot of blood. _____

8. A horse points its ears toward noises to hear sounds that are faint or far away. _____

HORSE: HUMANS' BEST FRIEND

Activity 4

Grades 2–4



Name: _____

Where would humans be without the horse? When humans first rode horses, they realized they could travel much farther than on foot. They could explore, hunt, and farm more easily. What other jobs have horses had in history? Use the table below to list and describe some of the important jobs horses have held. Create a horse's résumé.

Equus Caballus
One Stable Drive
Galloping, STATE 05276

JOB TITLE	JOB DESCRIPTION

Section Two: *Grades 5–9*

TEACHER INFORMATION

ACTIVITY ONE: A Story of Survival

This activity uses a timeline to touch upon some relevant dates in the long and winding history of the horse.

OBJECTIVES

Upon completing this activity, students will be able to:

- **identify key dates in the history of the horse.**
- **make a presentation to the class on an important event in horse history.**
- **trace and analyze the evolutionary changes from *Eohippus* to *Equus caballus*.**

PREPARATION AND PROCEDURE

Make copies of the activity sheet on page 13 for students. Organize library and Internet time for research, and gather resources for the classroom. Then introduce this activity by reviewing what students learned from the film about the history of the horse.

Distribute the activity sheets to students and review Part 1. Provide time and resources for research. You may wish to share facts from the Background Information section of this guide to enhance discussion. After students perform preliminary research to fill in four dates or events on the timeline, make sure everyone has chosen an event from the timeline on which to present a report. Give students guidelines and a format to follow that are suitable for your group (such as the due date and length). Then provide additional time for presentation research.

Discuss Part 2 with your students and provide them with appropriate resources and time to research the successful evolutionary changes between *Eohippus* and *Equus caballus*. (See the Resource List on the inside back cover for suggestions.)

EVALUATION

Timeline supplement answers will vary. You might use a traditional scoring rubric to evaluate the presentations for Part 1. Answers for Part 2 will vary, but students should show comprehension of the basic idea that environmental changes and other factors determine the success of a species as it evolves.

ACTIVITY TWO: Instinct *vs.* Environment

In this activity, students develop an understanding of behavior, in response to a stimulus, as a combination of heredity and experience. Students will analyze a horse's behavior in a certain circumstance, such as in a battle, and create a chart or other visual representation, breaking down that behavior to its hereditary and experiential components.

OBJECTIVES

Students will be able to:

- **differentiate between instinctual and environmental actions.**
- **analyze a horse's actions and assign each to one of the above categories.**

PREPARATION AND PROCEDURE

Make copies of the activity sheet on page 14. Begin this activity by discussing the elements of the film that concerned instinctual versus learned behavior. This distinction played a major role in each of the three stories. You may need to review the difference between these two types of behavior: Instinctual behavior is something done naturally without thinking, while the environment shapes the behaviors we learn, such as looking before crossing the street. Once you are confident your students understand the difference, distribute copies of the activity sheet. This activity is well-suited for collaboration and discussion, so working in pairs is an option.

EVALUATION

Answers will vary depending on the situation chosen, but students should demonstrate an understanding of the difference between instinctual and environmental, or learned, behavior using a real example.

ACTIVITY THREE: From Lungs to Limbs

In this activity, students investigate the specialized functions of a horse's anatomy through a reading comprehension exercise.

OBJECTIVES

Students will be able to:

- **identify the main physical features of a horse.**
- **answer questions relating to the purposes of those features.**
- **connect those functions to real-life situations the horse encounters.**
- **understand that each part of the body is specialized.**

PREPARATION AND PROCEDURE

Make copies of the activity sheet on page 15 for students. Then begin this activity by asking students what they learned about the physical features of horses from the film. What special features did they notice? What purpose does such a feature serve? For example, why are a horse's eyes on the sides of its head? (for maximum peripheral vision) Distribute the activity sheet and instruct students to read the passage carefully and answer the questions by circling the appropriate answers.

EVALUATION — Answers:

1. b, **2.** c, **3.** a, **4.** a, **5.** b, **6.** c, **7.** a, **8.** c, **9.** c, **10.** b

Section Two: *Grades 5–9*

TEACHER INFORMATION

ACTIVITY FOUR: A Friend Through History

Horses are so ingrained in our culture that it's difficult to imagine life without them. In this activity, students are challenged to explain horses and the horse's role in history and society to someone with no prior knowledge.

OBJECTIVES

Students will be able to:

- **identify the key areas throughout history in which horses had a major effect on human life.**
- **identify important roles horses play in human's lives today.**
- **begin to consider how human life would be different without horses.**

PREPARATION AND PROCEDURE

Obtain a selection of books from the Resource List for classroom research. Make copies of the activity sheet on page 16 for students. Then introduce this activity by asking students for ideas about the roles that horses have played in history. Possible answers include working with cattle, plowing fields, and assisting police. Distribute the activity sheet and explain the students' task. They are to write a letter to an imaginary pen pal who knows absolutely nothing about horses. By separating and listing some of the passive and assumed ways that horses affected humans, students will see the enormous impact these animals have had on our lives.

EVALUATION

While answers will vary, an explanation of the horse should include some of the following roles: wartime (cavalry, reconnaissance, supply, medical vehicles), travel (carrying riders; pulling stagecoaches, cabs, streetcars, and delivery vehicles), hunting, chariot races, ranching, industrial horsepower (in mines and factories), ceremonies, pulling barges on canals, farming duties (preparing the land, planting, harvesting, and making deliveries), assisting police and firefighters, and mail delivery.

Extension Activities

Extension to Activity 1

- **Encourage students to identify examples of the prevalent role of the horse in art, literature, and movies. Students then study one example in detail and share their findings with the class.**

Extensions to Activity 2

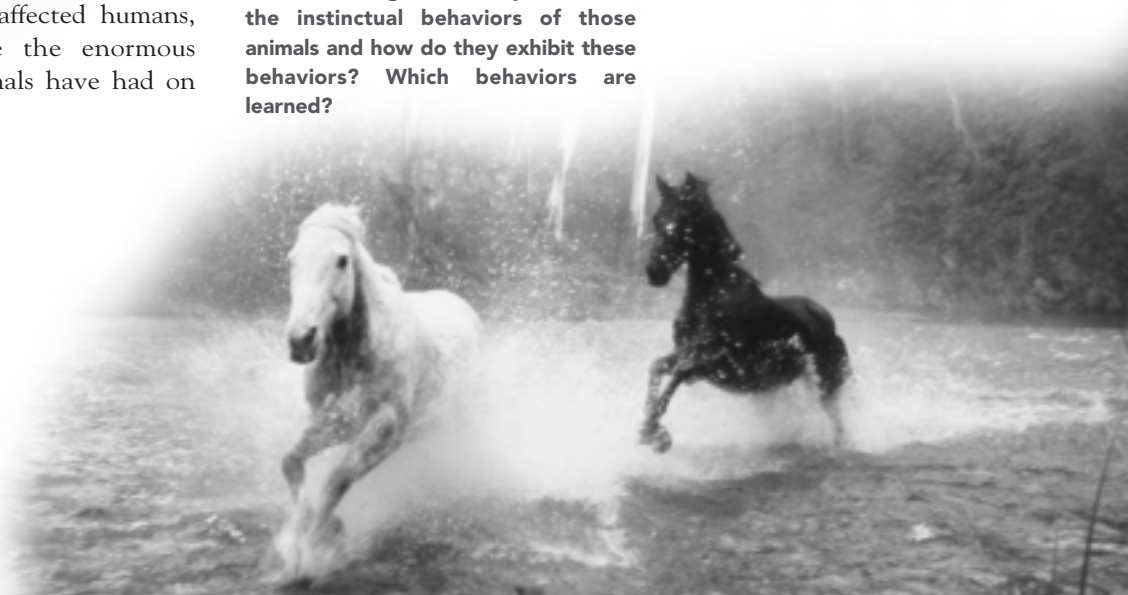
- **The film *Horses: The Story of Equus* featured Bay, a stunt horse. Horses were stars in many movies throughout the 1930s, 40s and 50s. Invite students to watch one of these films. While watching the film, students should look at the horse's relationship to the other actors, the physical stunts it must perform, and the "acting."**
- **Encourage students to consider other animals that have been domesticated — either trained or raised by humans — such as dogs and sheep. What are the instinctual behaviors of those animals and how do they exhibit these behaviors? Which behaviors are learned?**
- **Encourage students to consider the chain of events that begins with the removal of a species' predators. What happens to the population? the resources?**

Extension to Activity 3

- **It takes a very special horse to become a racehorse. Invite your students to consider what characteristics make a winner. Some of the physical elements can be determined through the "From Lungs to Limbs" activity. What mental strengths must a horse have?**

Extensions to Activity 4

- **Have students research and discuss the purpose and effects of national laws to protect feral horses. Such laws exist in some South American countries, Australia, France, and the United States. The U.S. Wild Free-Roaming Horse and Burro Act of 1971 gave Congress the authority to manage, protect, and control wild horses. Prior to that legislation, wild horses had been subjected to mistreatment and worse. Students might prepare a formal debate on the issue of feral horse preservation. (See the Resource List for suggested references.)**
- **The Black colt in the film *Horses: The Story of Equus* became part of equine history when he joined a free-roaming herd. Have students imagine they were the horse and have them describe what they would find appealing about this life. How does this life compare to the lives of the other two horses?**

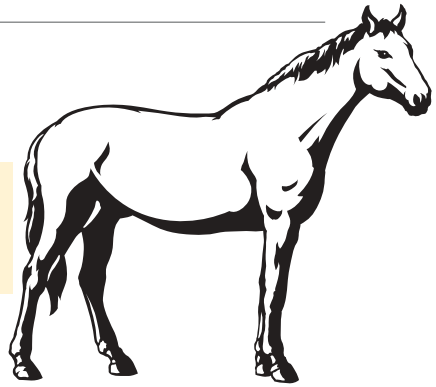


A STORY OF SURVIVAL

Activity 1

Grades 5–9

Name: _____



60 Million Years Ago

60 million years ago
Earliest horse relative, *Eohippus*, lives

2.5 million years ago
Modern horse species, *Equus caballus*, evolves

15,000 years ago
Cave drawings are made in Spain showing primitive people's familiarity with horses

10,000 years ago
Horses disappear from North and South America

10,000-6,000 years ago
Changes in climate drive horses out of Europe and into Central Asia, where the terrain is still open grassland

6,000 years ago
Humans domesticate horses in present-day Ukraine

4,000 years ago
First use of horse-drawn chariot occurs in the Ural Mountain area in Asia

A.D. 1494
Explorers reintroduce horses to the Americas

1600s
Horse raising farms appear in what is now the south-western United States

1800s
Travelers bring first horses to Australia

1960s
The last of the truly wild horses disappear from Mongolia in Asia. Today's feral horses are descended from domesticated horses.

1971
United States Congress passes The Wild Free-Roaming Horse and Burro Act protecting feral horses

Part 1

This timeline shows just a few of the high points in the horse's story. Do your own research and fill in at least four or more points on the timeline. Then either choose one of the original events on the timeline or one that you added, and research the event further. Prepare a presentation for the class.

Part 2

When *Eohippus* roamed North America, the land was damp and thick with shrubs and plants, similar to a jungle. Over time, the land dried out and became more wooded, similar to a forest. The landscape continued to change, and by the time *Equus caballus* appeared, North America had many plains with wide open spaces.

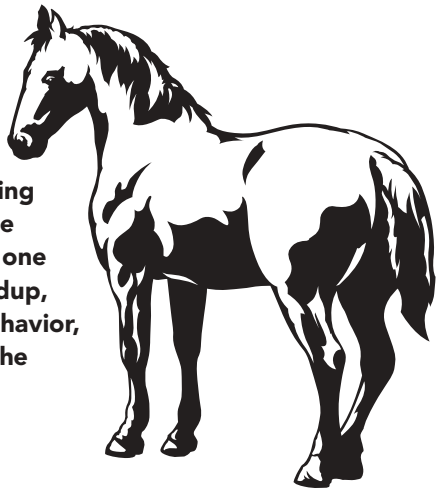
Research the evolutionary process that occurred between these two species. Remember that evolution is not a straight line. There are many species in between. Some lasted a long time; some did not. As you trace the changes, try to identify the environmental conditions that would have caused such changes to be successful. For example, horses' eyes are on the sides of their heads, giving them superior peripheral vision. That change was important for an animal that had predators and whose habitat consisted of plains.

INSTINCT *VS.* ENVIRONMENT

Activity 2

Grades 5–9

Name:



Nature *vs.* nurture. It's an age-old debate about which elements of a living thing are ingrained in the genes (hereditary, internal, instinctive) and which are experiential (environmental, external, learned). In the film *Horses: The Story of Equus*, filmmakers approach this topic when describing the Chestnut racing. The narrator says that the horse cares little about the owner's wishes. It knows only that "its greatest instinct is to run." Select one situation a horse might be in, such as a battle, a horse race, a cattle roundup, a leisure ride, or a wagon pull. Analyze the situation, the horse's likely behavior, and what a human might expect from a horse in that situation. Then use the chart below to classify those behaviors as hereditary or experiential.

Hereditary (instinct)	Experiential (learned)

FROM LUNGS TO LIMBS

Activity 3

Grades 5–9

Name: _____

Read the following passage carefully. When you have finished, answer the questions below by circling the correct answer.

The film *Horses: The Story of Equus* gives the viewer a sense of the enormous power and efficiency of horses in general. Like an efficient, successful machine, the horse's body has specific features that correspond with highly specialized functions. These physical and mental characteristics were refined over many years as the environment changed. For example, today's horse, called *Equus caballus*, can be traced back to *Eohippus*, a fox-sized, shrubbery-eating creature that depended on camouflage for protection. *Eohippus* was well-suited to its environment, which was almost jungle-like, with plenty of food and low shrubs for cover.

However, in the millions of years that separated *Eohippus* and *Equus caballus*, the modern horse, Earth's climate and environment changed drastically. In areas where the horse's ancestors lived, the terrain changed first to woodlands and then to grassy plains. It was no longer helpful to use camouflage as defense. No matter what activity the horse was engaged in, it needed to be able to detect predators from any direction and then flee quickly. The horse's senses make it very good at detecting potential danger. Its ears move in any direction toward sound, and its nasal passages are large and can open widely. Its body and skin are not only sensitive to touch, but also to vibrations coming from the ground. The horse's eyes are on the sides of its head so it can see in most directions without moving its head.

Horses spend most of their time grazing because they need to eat a large amount of grass to satisfy their needs. Their ability to survive on a relatively poor food source has been advantageous to the horse, allowing it to live where other animals could not. That ability is thanks in part to its large mouth and specialized digestive system.

In order to thrive, an animal must not only eat, but it must escape predators. As its main defense became flight, often from a complete standstill, the horse developed long legs and strong hindquarters. Its organs, such as a large heart and lungs, became specialized for flight and endurance. All of those factors have allowed the horse to survive while many other species did not.

1. Which species has a longer neck for eating?
- a. *Eohippus*
- b. *Equus caballus*
- c. both

2. Which of the following features helps a horse run long distances?
- a. sensitive skin
- b. long mouth
- c. large lungs

3. Which of the following features helps a horse detect a predator long before it can be seen?
- a. ears
- b. strong hindquarters
- c. large heart

4. Which of the following features is most important to a horse when fleeing danger?
- a. long legs
- b. adaptable digestive system
- c. sensitive skin

5. Which of the following areas do you think is the hardest for a horse to see?
- a. to its right
- b. right in front of its nose
- c. to its left

6. In general, animals as large as a horse are not fast movers. Which of the following features contributes *least* to a horse's speed and agility?
- a. large heart
- b. long legs
- c. sensitive skin

7. Which of the following features is *least* helpful in horse racing?
- a. eyes that can see in almost every direction
- b. strong hindquarters
- c. large heart

8. Which of the following features has been most important in allowing the horse to survive in areas where other animals cannot?
- a. sensitive skin
- b. large nasal passages
- c. ability to survive on poor food source

9. Which of the following features allows a horse to seemingly know what the rider wants before he or she gives the command?
- a. excellent hearing
- b. long legs
- c. sensitive skin

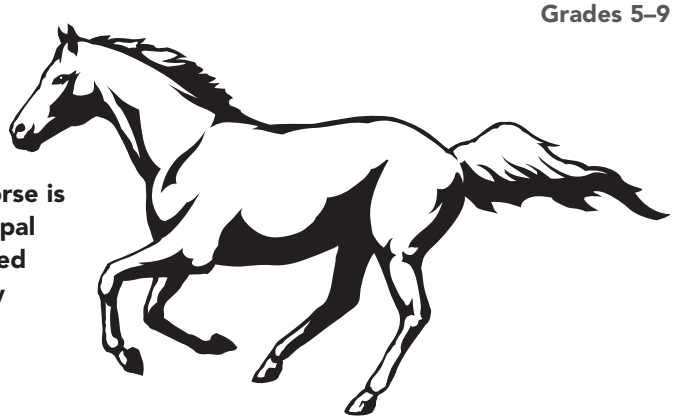
10. Based on what you read in the passage, which event do you think a horse would detect before humans would?
- a. its birthday
- b. an earthquake
- c. an important visitor's arrival

A FRIEND THROUGH HISTORY

Activity 4

Grades 5–9

Name: _____



Imagine it's the year 2100. Humans have become friendly with creatures on another planet. In fact, one is your pen pal. He doesn't know anything about the horse and asks you why the horse is so important. Use the space below to write a letter to your pen pal describing the many jobs and important roles the horse has played throughout history. Be sure to explain how the horse made many things possible for humans.

Dear: _____,

Bibliography

Ainslie, Tom & Bonnie Ledbetter. *The Body Language of Horses.* New York: William Morrow, 1980.

Ancona, George. *Man and Mustang.* New York: Macmillan, 1992.

Budiansky, Stephen. *The Nature of Horses.* New York: The Free Press, 1997.

Compton's Encyclopedia, Vol. 10. Compton's Learning Co., 1987.

Dent, Anthony. *The Horse Through Fifty Centuries of Civilization.* New York: Holt, Rinehart and Winston, 1974.

Edwards, Elwyn Hartley. *The New Encyclopedia of the Horse.* London: Dorling Kindersley, 1994.

Edwards, Elwyn Hartley. *Horses* (Eyewitness Handbooks). London: Dorling Kindersley, 1993.

Evans, Edna H. *Famous Horses and Their People.* Brattleboro, Vermont: The Stephen Green Press, 1975.

Flade, Johannes E., Erich Tylinek & Zuzana Samková. *The Compleat Horse.* New York: Prentice Hall, 1987.

Clutton-Brock, Juliet. *Horse* (Eyewitness Books). London: Dorling Kindersley, 1992.

Kingfisher Visual Factfinder, The. Michèle Byam (Series Ed.). New York: Kingfisher, 1996.

Ling, Mary. *Foal.* London: Dorling Kindersley, 1992.

Meltzer, Milton. *Hold Your Horses!* New York: HarperCollins, 1995.

National Geographic Book of Mammals. Washington, DC: The National Geographic Society, 1998.

Rodenas, Paula. *The Random House Book of Horses and Horsemanship.* New York: Random House, 1997.

Scanlan, Lawrence. *Wild About Horses.* New York: HarperCollins, 1998.

Web Bibliography

www.pbs.org/wildhorses/wildintro.html - Wild Horses: An American Romance

www.wildhorseandburro.blm.gov/ - Bureau of Land Management's Wild Horse and Burro Program

www.bardalisa.com/bardalisa/ - American Mustang and Burro Association

Resource List

In addition to information that can be found on *www.IMAX.com*, check out these resources.

Web sites

General

www.pbs.org/wildhorses/wildintro.html - Wild Horses: An American Romance

www.pbs.org/wnet/nature/horses/ - Web companion to PBS nature program on Horses

www.wildhorseandburro.blm.gov/ - Bureau of Land Management's Wild Horse and Burro Home Page

www.savewildhorses.org/ - The Wild Horse and Burro Freedom Alliance

www.coffinbaypony.asn.au/ - Coffin Bay Pony Society

www.thebrumby.org - Brumby Protection Group

www.halcyon.com/mongolia/Takhi.html - Takhi: The Mongolian Wild Horse

www.arkwild.org/ - The Abaco (Bahamas) Wild Horse Fund

www.pbs.org/wnet/nature/mongolia/ - Nature: Wild Horses of Mongolia

Wild Horse Annie

www.savewildhorses.org/annie.htm

Photographs

www.wildhorseandburro.blm.gov/photos.htm - Wild Horse Photo Gallery

www.equinenet.org/life/blm1.html - A Photo Essay of Wild Horse Roundup

Just For Kids

http://horsefun.com - For horse-loving kids

www.equinenet.org/life/colorbk.html - Printable coloring book pages featuring horses

Wild Horse Adoption Programs

www.bardalisa.com/bardalisa/ - American Mustang and Burro Association

www.wildhorseandburro.blm.gov/adoption.htm - Bureau of Land Management's Wild Horse and Burro Adoption Page

www.equinenet.org/life/qa.html - FAQs about Wild Horses and Burros

Books for Students

General

Ancona, George. *Man and Mustang*

Farley, Walter. *The Black Stallion Series*

Henry, Marguerite. *Misty of Chincoteague*

Henry, Marguerite. *Mustang, Wild Spirit of the West*

Kathrens, Ginger. *Cloud: Wild Stallion of the Rockies*

Meltzer, Milton. *Hold Your Horses!: A Feedbag Full of Fact and Fable*

Patent, Dorothy Hinshaw. *Where the Wild Horses Roam*

Roever, J.M. *The Mustangs*

Ryden, Hope. *The Wild Colt; The Life of a Young Mustang*

Pony Boy, Gawani. *Out of the Saddle: Native American Horsemanship*

Savitt, Sam. *Wild Horse Running*

Horse Racing

Johnson, Neil. *Born To Run: A Racehorse Grows Up*

Hillenbrand, Laura. *Seabiscuit: An American Legend*

Nack, William. *Secretariat: The Making of a Champion*

Rodenas, Paula. *The Random House Book of Horses and Horsemanship*

Native Americans/The American West/Horses

Brink, Carol Ryrie. *Caddie Woodlawn*

Kalman, Bobbie. *Bandanas, Chaps and Ten-Gallon Hats*

Kalman, Bobbie. *Nations of the Plains*

Pony Boy, Gawani. *Out of the Saddle: Native American Horsemanship*

Savage, Candace. *Born to Be a Cowgirl: A Spirited Ride Through the Old West*

General Audience

Budiansky, Stephen. *The Nature of Horses*

Dines, Lisa. *The American Mustang Guidebook*

Dobie, J. Frank. *Mustangs and Cowboys*

Hansen, Skylar. *Roaming Free*

McCarthy, Gary. *Mustang Fever*

Purcell, L. Edward. *Wild Horses of America*

Ryden, Hope. *America's Last Wild Horses*

Ryden, Hope. *Mustangs, A Return to the Wild*

Scanlan, Lawrence. *Wild About Horses*

IMAX®

HORSES

THE STORY OF EQUUS

THE AUSTRALIAN FILM FINANCE CORPORATION, MBP AND MULLION CREEK & BEYOND PRESENT AN EQUUS FILM PRODUCTION HORSES - THE STORY OF EQUUS

EXECUTIVE PRODUCERS MIKAEL BORGLUND, MICHAEL CAULFIELD & RAINER MOCKERT PRODUCERS LIZ BUTLER & MICHAEL CAULFIELD DIRECTOR OF PHOTOGRAPHY TOM COWAN

COMPOSER ROGER MASON EDITOR MELANIE SANDFORD NARRATOR GABRIEL BYRNE WRITTEN & DIRECTED BY MICHAEL CAULFIELD FINANCED BY THE AUSTRALIAN FILM FINANCE CORPORATION

SOUNDTRACK AVAILABLE AT IMAX THEATRES AND SELECTED RETAIL STORES WWW.IMAX.COM

WEEKLY READER

THE ASSOCIATION OF EDUCATIONAL PUBLISHERS