

Weather Watching

Fill in the circle to complete the sentence. Then answer questions 3, 4, and 5.

1. An example of severe weather is _____.

- (A) a hurricane that causes flooding
- (B) using an umbrella on a rainy day
- (C) enough snow to make a snowman

2. A synonym for *forecast* is _____.

- (A) data
- (B) predict
- (C) process

3. Do you agree that weather forecasts are important for people's safety?

Explain your answer.

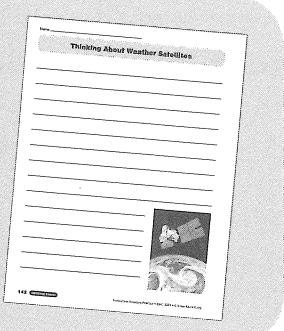
4. What are some advantages of a supercomputer to meteorologists?

5. Weather satellites watch wildfires and volcanoes. How do you suppose smoke or ash could affect weather on Earth?

Write About the Topic

Use the Writing Form to write about what you read.

Argue for building a new satellite that provides more data, takes better pictures, and circles the Earth faster.



Changes in Farm Machinery

Level 1 ■■

Words to Know list, Reading Selection, and Reading Comprehension questions

The Plow

In early America, 90 out of every 100 people lived on farms and grew their food. Today, only one out of every 100 people in the United States grow food on their farms, but farms produce much more food than they did in earlier times. In farm machinery are you part of the reason why?

The plow is an important farming tool. It helps turn the earth for planting. The earliest Romans used plows pulled by oxen or mules. Some were made with a wooden blade. Americans used a wooden blade. Sometimes the blade had an iron tip. The blade made a furrow in the ground. A team of oxen or mules pulled the plow.

In the 1400s, American farmers began to move to the West. Many of these people got stuck in the grass-covered soil there. Oxen turned a slow, hard furrow. Farmers invented a more efficient plow that could turn the earth through the greasy soil, mud, and stones.

In the mid-1800s, sulky plows came into use. They had small wheels and a seat for the farmer. A team of horses pulled the sulky plow. In the late 1800s, steam-powered tractors began to be used to pull plows. By the 1920s, tractors ran on gasoline. These machines made the farmer's work even faster.

In the middle of the 20th century, many American farmers switched to steel-tired tractors. These tractors were made between 1940 and 1970. Walking plows gave way to mold plows and farm machinery.

Words to Know

- The Plow
- ancient
- oxen
- mules
- furrow
- invented
- steel
- sulky plows
- tractors
- gasoline
- ground

Notes

Fill in the circle to complete the sentence.

and 5.

154 Changes in Farm Machinery Nutrition Reading Practice • EMC 3233

Level 2 ■■■

Words to Know list, Reading Selection, and Reading Comprehension questions

How Plows Have Changed

Fiction An American farmer around 1800 had the long handles of a plow pulled by two mules. The ears are around 1800. He plowed his field by giving directions. "Get us till the soil so we can go right." "Hooray!" and they go to the left. In the 1800s, many farmers still used wooden blade plows in the hot sun.

Through the ages, plows have used plows to turn the earth for planting crops. It is known for certain who invented the plow, but it was probably the ancient Greeks and Romans who pulled by oxen or mules.

In 1800, American plows were made from wood. Most had a furrow, or rut, in the ground. A curved wooden moldboard was used to turn the soil. In the 1800s, American farmers began to move west. The soil of the prairie was very hard. It required a smooth and strong plow to turn the soil. In 1830, about 100 bushels of wheat and oats were produced per acre of land. By the 1850s, the amount had increased to 100 bushels of wheat and 27.2 metric tons of oats. In the middle of the 1800s, steam power was used. They had wheels and a seat for the farmer. A team of horses pulled the sulky plow. Next was the moldboard plow. It was a heavy plow pulled by horses. It had wheels and a seat for the farmer to ride. These plows made forming furrows easier so the land could be planted faster. The moldboard plow was a great invention.

In the 19th century, Americans began to move west again. The grass-covered prairies stuck to the blades of chariot wheels. John Deere invented a stronger, sharper moldboard plow. It had a polished steel blade. Oxen and mules pulled plows.

In the 20th century, more tractors came into use. Farmers could turn the soil with moldboards or bottoms. Moldboards were either forming levered chisel plows or harrows. John Deere's former feeds many people in the world today. In 1930, the work of one farmer fed 129 people. In 1990, it was estimated that the labor of one farmer fed 129 people. In 1990, it was estimated that the labor of one farmer fed 129 people.

Words to Know

- How Plows Have Changed
- plow
- mules
- furrow
- invented
- ancient
- oxen
- curved
- moldboard
- bushels
- sulky plow
- tractors
- gasoline

Notes

Fill in the circle to complete the sentence.

and 5.

155 Changes in Farm Machinery Nutrition Reading Practice • EMC 3233

Level 3 ■■■■

Words to Know list, Reading Selection, and Reading Comprehension questions

History of the Plow

Through the ages, people have used the earth for planting crops. The plow is one of the most important pieces of farm machinery in history. The simplest plow is a stick sharpened at one end and used by a person who for digging. It was the first plow ever invented, but the ancient Romans used plows. Oxen and mules pulled plows.

In ancient Egypt, farmers used a harrow or rut, in the ground. A curved moldboard blade made a furrow, or rut, in the ground. A team of oxen pulled plows. In the 1800s, American farmers began to move west. The soil of the prairie was very hard. It required a smooth and strong plow to turn the soil. In 1830, about 100 bushels of wheat and oats were produced per acre of land. By the 1850s, the amount had increased to 100 bushels of wheat and 27.2 metric tons of oats. In the middle of the 1800s, steam power was used. They had wheels and a seat for the farmer. A team of horses pulled the sulky plow. Next was the moldboard plow. It was a heavy plow pulled by horses. It had wheels and a seat for the farmer to ride. These plows made forming furrows easier so the land could be planted faster. The moldboard plow was a great invention.

In the 19th century, Americans began to move west again. The grass-covered prairies stuck to the blades of chariot wheels. John Deere invented a stronger, sharper moldboard plow. It had a polished steel blade. Oxen and mules pulled plows.

In the 20th century, more tractors came into use. Farmers could turn the soil with moldboards or bottoms. Moldboards were either forming levered chisel plows or harrows. John Deere's former feeds many people in the world today. In 1930, the work of one farmer fed 129 people. In 1990, it was estimated that the labor of one farmer fed 129 people.

Words to Know

- History of the Plow
- plows
- sharpened
- invented
- ancient
- oxen
- furrow
- moldboard
- blacksmiths
- practices
- polished
- sulky plow
- tractors
- gasoline
- labor

Notes

Fill in the circle to complete the sentence.

and 5.

156 Changes in Farm Machinery Nutrition Reading Practice • EMC 3233

Assemble the Unit

Reproduce and distribute one copy for each student:

- Visual Literacy page: The Plow Through Time, page 151
- Level 1, 2, or 3 Reading Selection and Reading Comprehension page and the corresponding Words to Know list
- Graphic Organizer of your choosing, provided on pages 180–186
- Writing Form: Plows, page 152

Introduce the Topic

Review the pictures of plows with students. Explain that plows have been used for thousands of years to turn soil for planting. This page shows how farming technology has improved through the centuries.

Read and Respond

Form leveled groups and review the Words to Know lists with each group of students. Instruct each group to read their selection individually, in pairs, or as a group. Have students complete the Reading Comprehension page for their selection.

Write About the Topic

Read aloud the leveled writing prompt for each group. Tell students to use the Graphic Organizer to plan their writing. Direct students to use their Writing Form to respond to their prompt.

The Plow Through Time

Notes

Fill in the circle to complete the sentence.

and 5.

151 The Plow Through Time Nutrition Reading Practice • EMC 3233

Plows

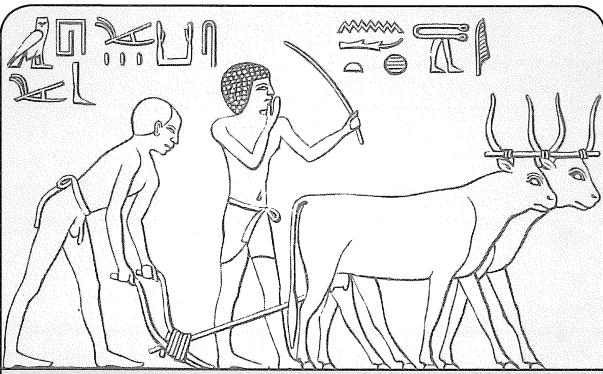
Notes

Fill in the circle to complete the sentence.

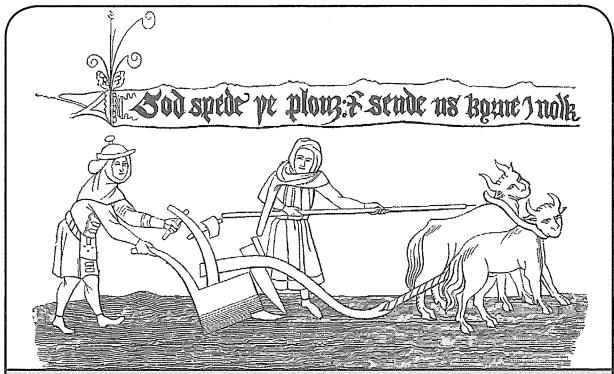
and 5.

152 Plows Nutrition Reading Practice • EMC 3233

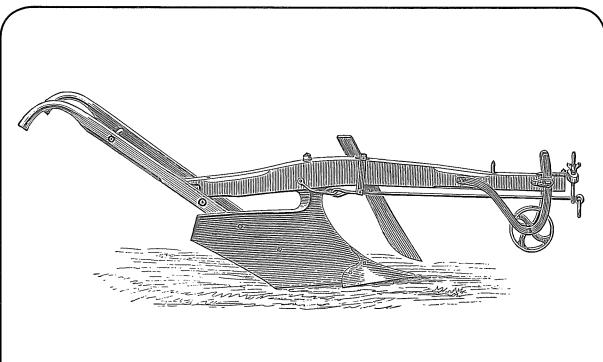
The Plow Through Time



Ancient Egyptians used a plow called an ard, pulled by oxen.



Farmers in the Middle Ages hoped for a good crop when they plowed.

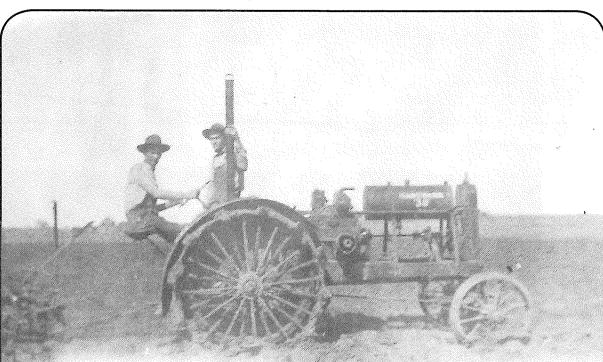


Early American farmers used a wooden plow with a curved wooden moldboard.

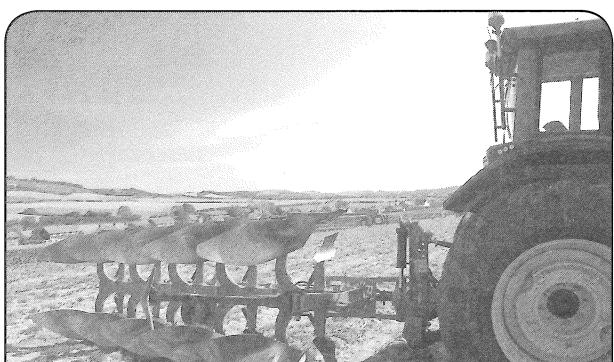


This man used a horse to pull his plow.

smereka / Shutterstock.com



Two men plow a North Carolina field on a tractor in the 1920s.



Modern tractors can plow several furrows at one time.

Name _____

Plows



Words to Know

The Plow

machinery

plow

ancient

Romans

oxen

mules

furrow

invented

steel

sulky plows

tractors

gasoline

gradual

Words to Know

How Plows Have Changed

plow

mules

reins

furrow

invented

ancient

oxen

curved

moldboard

bushels

sulky plow

tractors

gasoline

Words to Know

History of the Plow

plows

sharpened

invented

ancient

oxen

furrow

moldboard

blacksmiths

prairies

polished

sulky plow

tractors

gasoline

labor

Changes in Farm Machinery



Changes in Farm Machinery



Changes in Farm Machinery



The Plow

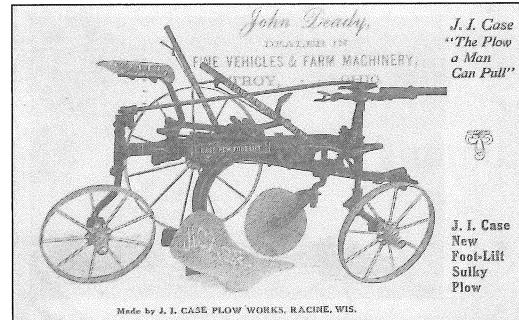
In early America, 90 out of every 100 people lived on farms and grew their food. Today, only two out of every 100 people in the United States grow food on farms. But U.S. farms produce much more food than ever before. Changes in farm machinery are part of the reason why.

The plow is an important farming tool. It is used to turn the earth for planting. The ancient Romans used plows pulled by oxen or mules. Farmers in early America used plows with a wooden blade. Sometimes the blade had an iron tip. The blade made a furrow in the ground. Seeds could be planted in the furrows. A team of horses or mules pulled the plow.

In the 1800s, Americans began to move west. The blades of their plows got stuck in the grass-covered soil there. John Deere invented a smooth and strong steel blade. It plowed through the grassy soil, roots and all.

In the mid-1800s, sulky plows came into use. They had wheels and a seat for the farmer. A team of horses pulled the sulky plow. In the late 1800s, steam-powered tractors were used to pull plows. But by the 1920s, tractors ran on gasoline. They could pull several plows at once. These plows made the farmer's work even faster.

In the first half of the 20th century, many American farmers still walked behind their plows in the hot sun. A gradual change was made between 1945 and 1970. Walking plows gave way to modern plows and farm machinery.



A sulky plow was new technology in the 1800s. Farmers could ride their plows instead of walking behind them.



Modern tractors and plows have several blades and moldboards, called bottoms. They can make many furrows at one time.

The Plow

Fill in the circle to complete the sentence. Then answer questions 3, 4, and 5.

1. The plow is a farming tool _____.
Ⓐ first invented by John Deere
Ⓑ that was used in ancient Rome
Ⓒ that pulls a tractor

2. A furrow is a _____.
Ⓐ mule
Ⓑ blade
Ⓒ rut

3. Describe a sulky plow and the advantage it had over plows that came before it.
-
-

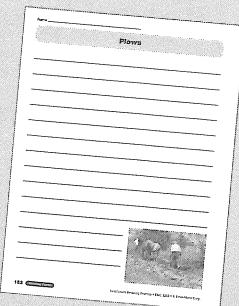
4. What idea in the text would you like to read a book about? Why?
-
-

5. What information would you use to support the view that it was better to have plows pulled by tractors than by mules?
-
-

Write About the Topic

Use the Writing Form to write about what you read.

If you went back in time, would you like to farm with a good team of horses or a 1920s tractor? Explain why.



How Plows Have Changed

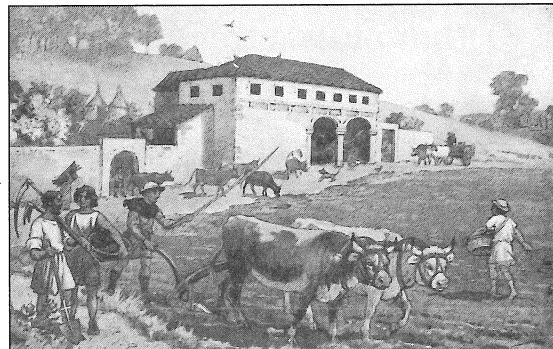
Picture an American farmer around 1910. He holds the long handles of a plow pulled by two mules. The reins are around his shoulders. He plows a straight furrow by giving directions. "Gee!" he tells the mules to go right. "Haw!" and they go to the left. In the 20th century, many farmers still walked behind their plows in the hot sun.

Through the ages, people have used plows to turn the earth for planting crops. It isn't known for certain who invented the plow, but the ancient Romans used plows pulled by oxen or mules.

In 18th century America, plows were made from wood. An iron-tipped blade made a furrow, or rut, in the ground. A curved wooden moldboard pushed aside the soil. Seeds were planted in the furrows.

In the 19th century, Americans began to move west. The soil of the grass-covered plains stuck to the blades of their plows. John Deere invented a smoother and stronger steel blade and moldboard. It plowed through the grassy soil, roots and all. In 1830, about 250 to 300 hours of work produced 100 bushels (2.72 metric tons) of wheat. In the middle of the 1800s, sulky plows came into use. They had wheels and a seat for the farmer. A team of horses pulled the sulky plow. Near the end of the century, steam-powered tractors were invented.

By the 1920s, tractors ran on gasoline and pulled several plows at once. These plows could make the farmer's work go faster. By 1930, it took only 15 to 20 hours to produce 100 bushels (2.72 metric tons) of wheat. Between 1945 and 1970, farming continued to change. Plows drawn by horses or mules gave way to modern tractors and other machines. By 1955, it took only 6 to 12 hours to produce 100 bushels (2.72 metric tons) of wheat.



An ancient Roman farmer plows a field.



A modern day Korean farmer plows a field.

How Plows Have Changed

Fill in the circle to complete the sentence. Then answer questions 3, 4, and 5.

1. Wheat and other dry goods can be measured in _____.
Ⓐ inches
Ⓑ meters
Ⓒ bushels

2. A furrow is a _____.
Ⓐ place to plant seeds
Ⓑ part of a plow
Ⓒ type of tractor

3. John Deere's plow was called "the plow that broke the plains." In your opinion, is that a good description? Explain.
-
-

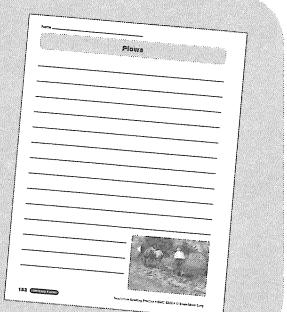
4. Give evidence that ancient farming methods were used into the 20th century.
-
-

5. How would you summarize what occurred in farming during the 19th and 20th centuries?
-
-

Write About the Topic

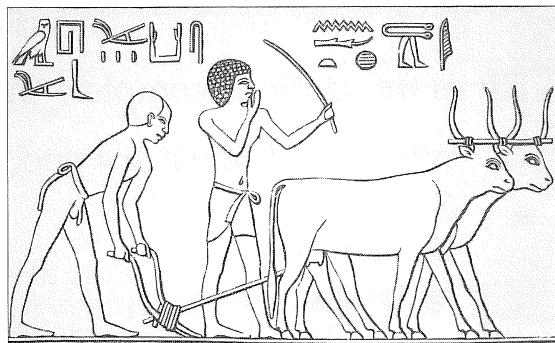
Use the Writing Form to write about what you read.

Use data from the text to support the idea that new farm machines changed farming.



History of the Plow

Through the ages, people have used plows to turn the earth for planting crops. The plow is the oldest and most important tool in farming history. The simplest plow is a stick sharpened at one end and used for digging. It isn't known for certain who invented the plow, but the ancient Romans used plows. Oxen and mules pulled plows in ancient Egypt.



An Egyptian farmer and his wife plow a field.

In 18th century America, farmers used walking plows made from wood. The iron-tipped blade made a furrow, or rut, in the ground. A curved moldboard pushed aside the soil. Seeds were planted in the furrows. Early American plows were made by blacksmiths, and one plow was often different from another.

In the 19th century, Americans began to move west. The soil of the grass-covered prairies stuck to the blades of their plows. John Deere invented a smoother, stronger polished steel blade and moldboard. It plowed through the grassy soil, roots and all. The next invention was a sulky plow. It was a riding plow pulled by horses. It had wheels and a seat for the farmer to ride. These newer plows changed farming because crops could be planted faster. That meant that a farmer was able to plant more land.



Modern plows may have as many as sixteen bottoms, or moldboards. They make many furrows at one time.

In the 20th century, more and more tractors came into use. The first tractors were steam powered, but by the 1920s tractors were run on gasoline. They were able to pull plows with many moldboards, or bottoms. Modern plows and other farming inventions changed farming. Today's farmer feeds many more people than a farmer did in the past. In 1930, the work of one farmer fed about ten people. By 1990, it was estimated that the labor of one farmer fed 129 people.