

Fort Davis
National Historic Site


National Park Service
U.S. Department of the Interior



Curriculum Materials Grades 2-5

Army Transportation and Supply At Fort Davis



<h1 style="margin: 0;">Fort Davis</h1> <h2 style="margin: 0;">National Historic Site</h2>	<p style="text-align: center;">National Park Service U.S. Department of the Interior</p>	
Curriculum Materials Grades 2-5		Teacher Notes: Army Transportation and Supply at Fort Davis

Topic: Army Transportation and Supply at Fort Davis

Standards and Objectives:

Grade 2	Grade 3	Grade 4	Grade 5
Social Studies: 113.4 - 4,7,8,16,19	Social Studies: 113.5 - 4,7,16,18	Social Studies: 113.6 - 7,9,13,24	Social Studies: 113.7 - 4,7,8,14,24,27
Language Arts: 110.4 - 3,10,12,13	Language Arts: 110.5 - 3,10,12,13	Language Arts: 110.6 - 10,13	Language Arts: 110.7 - 10,13
Math: 111.14 - 2.4, 2.9	Math: 111.15 - 3.4, 3.9	Math: 111.16 - 4.4, 4.11	Math: 111.17 - 5.3, 5.11

Materials needed:

- Copies of *Transportation and Supply: The Wagon and Old Blue Come Through!* (1 page) with accompanying student worksheet (2 pages)
- Copies of worksheet *Food Supplies for Fort Davis* (2 pages)
- Copies of worksheet *Comparing Mules and Oxen: Moving Supplies Along the Trail* (2 pages)
- Yardsticks or tape measures, and large floor space or outside area
- Calculators

Lesson Activities:

Begin with a pre-lesson discussion about how we get our supplies in today’s world.

Suggested questions:

- *How are these supplies delivered to stores?
- *How has this changed over time?
- *Is there a connection between the method of transportation and the items being shipped?
- *How do time and cost factor into selecting the method? Consider such things as toys, milk, lumber, clothing, new cars & trucks, and packaged food versus fresh produce and ice cream.

Activities and Projects:

*** Transportation and Supply: The Wagon and Old Blue Come Through!**

The activity for this lesson can be done as a whole class or in groups

The information sheet *Transportation and Supply: The Wagon and Old Blue Come Through!* can be made into an overhead transparency.

Worksheet 2 Answer Sheet

1. Decide on a weight to represent the average weight of a student. Now use the information on the previous page to estimate how many students represent the weight of each of the supply items below. Use a calculator to check for the correct answer. **Answers depend on class estimate.**
 - a. How many students does it take to equal the weight of a box of bacon? _____

- b. How many students does it take to equal a barrel of pickles? _____
- c. How many students does it take to equal one full load for a six-mule wagon?
- 2. Do you think the 6-mule army wagon was considered a large or small wagon for its time? Explain. **Accept any appropriate explanations.**
- 3. How does the wagon compare to a modern pickup truck? Is it larger, smaller, or about the same size? **Accept any appropriate explanations.**
- 4. Why do you think the wagon’s rear wheels are larger than the front wheels? **Accept any appropriate explanations.**
- 5. Why were there no cardboard boxes or plastic bottles in those days? **Accept any appropriate explanations.**
- 6. Do you see anything these days stored in wooden boxes or barrels? Explain. **Accept any appropriate explanations.**

*** Food Supplies for Fort Davis**

Students can discuss the worksheet questions, or they can calculate answers independently or in groups.

Answer Sheet for *Food Supplies for Fort Davis*

- 1. Use a calculator—which did not exist in the 1870s—to figure out how many days of each of the following items are in storage:

<u>Item</u>	<u>how many days’ worth on hand</u>
flour	21 days
beans	107 days
peas	107 days
rice	136 days
coffee	62 days
sugar	115 days
salt	90 days

- 2. What items should be ordered at this time if the officer wants to keep at least 2 months’ supply on hand? **flour and coffee**
- 3. Think about your own family.
 - a. What kind of supplies does your family keep on hand or keep stocked?
 - b. Why would people today keep a large supply of certain items?
Is it for some kind of need, or because the items were on sale, or what?
 - c. What about people who live in remote areas and not so close to stores—what would they keep on hand?
 - d. Does having a place to store things factor in? What about “shelf life” of certain things?
 - e. Why did the commissary sergeant at Fort Davis have to plan 2 months ahead?
 - f. Explain how different your life would be today if the closest grocery store was over 400 miles away. **Accept appropriate answers.**

*** Comparing Mules and Oxen: Moving Supplies Along the Trail**

Students will apply decision-making skills to a real situation considering several variables.

Answer Sheet for *Comparing Mules & Oxen: Moving Supplies Along the Trail*

1. Transporting supplies from Indianola to San Antonio:

	Number of days to reach destination	Number of animals needed	Cost of animals	Daily amount of grain needed for animals	Availability of grass for animals
Pack Mules	6 1/4 or 7 days	20	\$2,000	200 pounds	good
Mule Team	6 1/4 or 7 days	12	\$1,200	120 pounds	good
Oxen	8 1/3 or 9 days	12	\$300	0 (ate grass)	good

2. Transporting supplies from San Antonio to Fort Davis:

	Number of days to reach destination	Number of animals needed	Cost of animals	Daily amount of grain needed per animal	Availability of grass for animals
Pack Mules	23 days	20	\$2,000	200 pounds	sparse
Mule Team	23 days	12	\$1,200	120 pounds	sparse
Oxen	30 1/3 or 31 days	12	\$ 300	0 (ate grass)	sparse

- Based on what you learned from the chart, which animals would you choose to transport the supplies from Indianola to San Antonio? Explain your reasons.
Accept any appropriate explanations.
- Which animals would you choose to transport the supplies from San Antonio to Fort Davis? Explain your reasons. *Accept any appropriate explanations.*

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Student Activity: Army Transportation and Supply
at Fort Davis

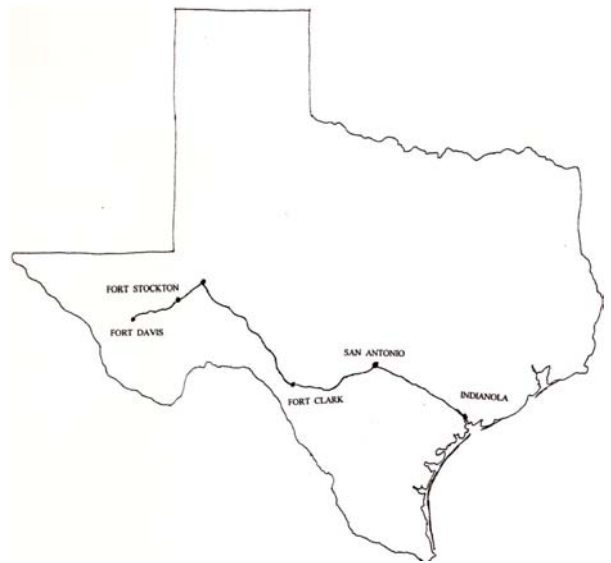
Army Transportation and Supply: The Wagon and Old Blue Come Through!

Frontier forts needed a huge amount of supplies to operate. Fort Davis, like many of the U.S. Army forts, was located far from its main supply center—San Antonio. Depending on the route, the distance could be over 400 miles. Food, lumber, uniforms, weapons, equipment, medicine, and building materials traveled to Fort Davis along a dirt road.

Where did the supplies originally come from? Many items came from factories or depots in the eastern United States on ships that sailed through the Gulf of Mexico to the Texas coast. Arriving at Indianola, near present-day Corpus Christi, supplies then moved in wagons to Victoria and on to San Antonio where the main Texas Army Depot was located. Often the government contracted with civilians to transport the goods.

Supplying Fort Davis, which often had over 200 soldiers and civilians at the post, was a large on-going operation. The army considered many factors such as time and expense in choosing how to transport goods. A mistake could end up costing a lot of money—or it might cause hardship among the soldiers if the goods were not received in a timely manner.

One example of such a problem occurred in 1871. A shipment containing 19,000 lbs. of bacon left San Antonio in wagons pulled by oxen and mules. The trip to Fort Davis took 70 days, as the wagons only traveled about 6 miles per day! When the bacon arrived, it weighed 16,800 pounds; over a ton of it had melted away! To make matters worse, only 11,000 pounds of the bacon was fit to eat. The oxen were very slow and the wagons had no refrigeration—so over 40% of the bacon had spoiled. Some army officials complained the bacon should have been transported in wagons pulled only by mules, which moved faster than oxen. What do you think?





To transport supplies to frontier forts, the army used various methods, including wagons pulled by mules or oxen, large two-wheeled carts drawn by mules or oxen, or mule packs with cargo tied to single mules. Imagine tons of army supplies moving along dirt roads—very, very slowly. The army also tried hauling freight with camels in the 1850s.

The next time you are in a car riding along the highway, look at those big trucks moving 70 miles per hour as they haul freight. Think about 135 years ago when animals hauled supplies along dirt roads, sometimes moving only 6 to 20 miles per day! How different it must have been!

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Curriculum Materials Grades 2-5 Student Activity: Army Transportation and Supply at Fort Davis
The Army Wagon - Student Worksheet

Army Transportation and Supply: The Wagon and Old Blue Come Through!



One common vehicle used for carrying supplies from San Antonio to Fort Davis was the six-mule army wagon. It was modeled after the Conestoga wagon and could cross streams. It could carry a heavy load and was not too clumsy to travel on rough or steep roads.

HOW BIG WAS IT?

According to U.S. Army specifications, the six-mule wagon had a body that measured 3 feet 6 inches wide, 2 feet deep, and 10 feet long. The front wheels were 3 feet 10 inches tall and the rear wheels were 4 feet 10 inches tall. (Is that about as tall as you?) The outside of the wagon was painted blue and the inside was painted dark red. It could carry a load of about 2,000 pounds—or one ton!

Something to do: Form an outline of the wagon with the bodies of students.

1. *Measure the dimensions of the wagon on the floor or ground.*
2. *Four students can stand at each of the corners and use their hands or a yardstick to show the height of the wheels.*

LOADING THE WAGON

In the 1800s, goods were packed in wooden boxes or in wooden barrels. The size of the box or barrel depended on the items it contained.



A box for bread was 26 by 17 by 11 inches.

A box for bacon was 20 by 20 by 28 inches and could hold 225 pounds.

A box 16 by 16 by 8 inches could hold a bushel of potatoes and weighed 70 pounds.

A barrel was 30 inches tall and 28 inches in diameter. It could hold 32 gallons of liquid that weighed about 256 pounds.

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Curriculum Materials Grades 2-5 Student Activity: Army Transportation and Supply at Fort Davis
Army Supply - Student Worksheet

Army Transportation and Supply: The Wagon and Old Blue Come Through!

DIRECTIONS:

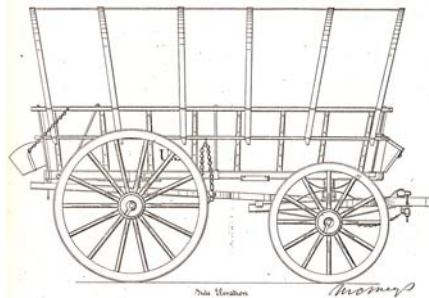
For discussion or for students to complete as a written assignment.



Hauling wood at Fort Davis

1. Decide on a weight to represent the average weight of a student. Now use the information on the previous page to estimate how many students represent the weight of each of the supply items below. Use a calculator to check for the correct answer.

- a. How many students does it take to equal the weight of a box of bacon? _____
- b. How many students does it take to equal a barrel of pickles? _____
- c. How many students does it take to equal one full load for a six-mule wagon? _____



Six-mule army wagon


2. Do you think the 6-mule army wagon was considered a large or small wagon for its time? Explain. _____

3. How does the wagon compare to a modern pickup truck? Is it larger, smaller, or about the same size? _____

4. Why do you think the wagon's rear wheels are larger than the front wheels?

5. Why were there no cardboard boxes or plastic bottles in those days? _____

6. Do you see anything these days stored in wooden boxes or barrels? Explain.

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<p>Curriculum Materials Grades 2-5 Student Activity: Army Transportation and Supply at Fort Davis Food Supplies – Student Reading and Worksheet</p>		

Food Supplies for Fort Davis



When food supplies arrived at Fort Davis, they were stored at the Post Commissary—which was like a big storehouse and an old-time grocery store put together. Since most supplies were shipped from San Antonio, about 400 miles away, on slow-moving wagons, food orders had to be made at least two months ahead of time. This meant keeping accurate

records of all the supplies in storage and ordering new supplies to arrive before they ran out.

The following is a record of food and related supplies in storage at Fort Davis on January 31, 1870: (Note: *lbs.* is the abbreviation for *pounds*)

Supplies on Hand	Quantity	Rations
Pork—Barrels	48	12,987
Flour—Barrels	31	5,503
Beans—lbs.	4,150	27,667
Peas—lbs.	417	27,811
Rice—lbs.	3,575	35,150
Coffee—lbs.	1,610	16,100
Tea—lbs.	414	27,600
Sugar—lbs.	4,475	29,833
Vinegar—gallons	336	33,600
Salt—lbs.	879	23,440
Pepper—lbs.	83	33,200



Commissary sergeant weighing supplies at Fort Davis

The quantity is the amount on hand in the commissary. A ration is the allowed daily serving of each item for each soldier. For example: a soldier was given a ration of 12 ounces of pork or bacon each day, and 48 barrels contained enough pork for 12,987 rations or servings.

There were 258 soldiers stationed on Fort Davis in January, 1870. To figure out how many days' rations were on hand, the commissary sergeant divided the number of rations by the number of soldiers. For example: 12,987 rations of pork divided by 258 equals 50.33 days' worth of pork in storage. Since this is not a two-month (60-day) supply, he needs to order more.

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Curriculum Materials Grades 2-5

Student Activity: Army Transportation and Supply at Fort Davis -- Food Supplies Student Worksheet

Food Supplies for Fort Davis

DIRECTIONS: Answer the following questions.

1. Use a calculator—which did not exist in the 1870s—to figure out how many days’ worth of each of the following items are in storage:

<u>Item</u>	<u>Number of days’ worth on hand</u>
flour	_____
beans	_____
peas	_____
rice	_____
coffee	_____
sugar	_____
salt	_____

2. What items should be ordered at this time in order to keep at least a 60-day supply on hand?



This modern photo shows the inside of the commissary at Fort Davis.

3. Think about your own family.

a. What kind of supplies does your family keep on hand or keep stocked up?

b. Why would people today keep a large supply of certain items? Is it for

some kind of need, or because the items were on sale, or what? _____

c. What about people who live in remote areas, not so close to stores—what would they keep on hand? _____

d. Does having a place to store items sometimes factor in? What about the “shelf life” of certain things? _____

e. Why did the commissary sergeant at Fort Davis have to plan 2 months ahead? _____

f. Explain how different your life would be today if the closest grocery store was over 400 miles away. _____

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Student Activity: Army Transportation and Supply at Fort Davis -- Comparing Mules and Oxen Student Worksheet

Comparing Mules and Oxen: Moving Supplies Along the Trail

DIRECTIONS: Work alone, with a partner, or in a group. Fill in the charts on the next page using the following information about the route and facts about the three types of animals used to transport goods. Remember the trail was a dirt road!

Road from Indianola to San Antonio—

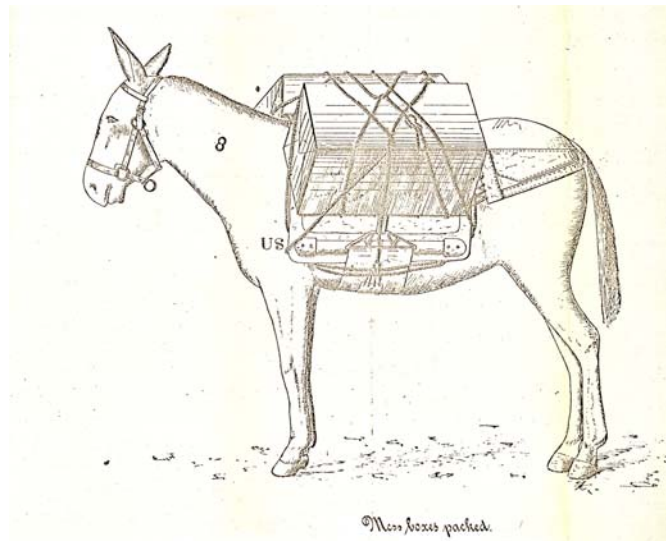
- The trip was about 125 miles from Indianola to San Antonio.
- The land was mainly flat with many trees.
- The area got a good deal of rainfall, averaging 35 inches per year.
- The topsoil and the road were mostly sandy loam and clay.

Road from San Antonio to Fort Davis—

- The trip was 400 miles one-way.
- There was little rainfall on most of the route, averaging 14-18 inches per year.
- The topsoil was rocky with gravel on the first part of the trip and then mainly limestone and volcanic rock with a thin covering of soil and prairie grasses.
- The land was gently-rolling hills for the first one hundred miles and then turned into dry, fairly flat prairie.

Pack Mule—

- A mule cost about \$100 in 1859.
- When loaded, it could travel an average of 20 miles per day.
- It could travel up steep hills and along narrow ledges.
- It needed to eat 10 pounds of grain per day (usually corn), as well as grass or hay.
- It could carry up to a 300-pound load tied to its back, but it usually only carried 200 pounds.
- It required less water and could stand heat better than any other pack animal (except camels).



Mule Teams—

- A team of six mules could pull a wagon with a load of 2,000 pounds.
- Each mule needed 10 pounds of corn plus grass or hay each day.
- A team of mules could pull an average of 20 miles per day.
- Mules have tough feet. When shod, they could travel over rough and rocky roads.
- A six-mule team cost about \$600 in 1859.


Oxen—

- A yoke of oxen (two animals) cost about \$50.
- Oxen required no grain and ate grass along the road.
- A team of six oxen could pull a wagon with a load of 2,000 pounds.
- A team of oxen could travel an average of 15 miles per day.
- They were good at traveling on sandy or muddy roads.

Oxen lost their strength as the prairie grass became drier and shorter.



A Yoke of Oxen
Museum of the Big Bend photo

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Curriculum Materials Grades 2-5		Student Activity: Army Transportation and Supply at Fort Davis -- Moving Supplies Along the Trail -- Student Worksheet

Comparing Mules and Oxen: Moving Supplies Along the Trail



Wagon at Fort Davis

1. Imagine that the year is 1870. The army at Fort Davis needs supplies transported from Indianola to San Antonio. The supplies include cans of lard, burlap sacks of rice, barrels of pork, sacks of beans, wooden boxes of hard bread, wooden boxes of canned tomatoes, barrels of molasses, and wooden boxes of potatoes as well as hams packed in sawdust and wrapped in cloth. The total weight is 4,000 pounds.

	Number of days to reach destination	Number of animals needed	Cost of animals	Daily amount of grain needed for animals	Availability of grass for animals
Pack Mules					good
Mule Team					good
Oxen					good

2. The same supplies need to be shipped from San Antonio to Fort Davis.

	Number of days to reach destination	Number of animals needed	Cost of animals	Daily amount of grain needed for animals	Availability of grass for animals
Pack Mules					sparse
Mule Team					sparse
Oxen					sparse

3. Based on what you learned from the chart, which animals would you choose to transport the supplies from Indianola to San Antonio? Explain your reasons.

4. Which animals would you choose to transport the supplies from San Antonio to Fort Davis? Explain. _____
