Aldridge Sawmill: The Story in Numbers

Subject and Grade 7th Grade Math and Social Studies

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Time duration Two 45-minute class periods or one 90-minute block period

Objective To practice math skills while becoming familiar with Texas' "Boom & Bust" economy and the natural history of the east Texas Piney Woods.

TEKS *Social Studies, Grade 7*

(7B), define and trace the impact of "boom-and-bust" cycles of leading Texas industries throughout the 20th and early 21st centuries such as farming, oil and gas production, cotton, ranching, real estate, banking, and computer technology

(8C), analyze the effects of physical and human factors such as climate, weather, landforms, irrigation, transportation, and communication on major events in Texas

(9A), identify ways in which Texans have adapted to and modified the environment and explain the positive and negative consequences of the modifications

(21A), create and interpret thematic maps, graphs, and charts representing various aspects of Texas during the 19th, 20th, and 21st centuries

(22A), use social studies terminology correctly

Mathematics, Grade 7

(1A), apply mathematics to problems arising in everyday life, society and the workplace

(4D), solve problems involving ratios, rates, and percents, including multi-step problems involving percent increase and percent decrease, and financial literacy problems

(4G), generate equivalent forms of fractions, decimals, and percents using real-world problems, including problems that involve money

(11B), determine the mean absolute deviation and use this quantity as a measure of the average distance data are from the mean using data set of no more than 10 data points

Materials

- "Zones of Annual Precipitation in Texas" map (included)
- "Natural Regions and Subregions of Texas" map (included)
- Internet computer access to **www.texasbeyondhistory.net/aldridge/index.html**
- "Aldridge Sawmill – The Story in Numbers" student handout OR "Aldridge Sawmill – The Story in Numbers" online version of handout: **https://quizizz.com/admin/quiz/6547f01110ed7c453dc81b51?source=quiz_share**
- Answer key to student handout

- Assorted geographical and botanical reference materials (e.g. field guides to Texas, Texas maps, travel guides, nonfiction trade books) (optional)
- Calculators (optional)

Activities and procedures

Part 1

Step 1: Display “Zones of Annual Precipitation in Texas” map. Explain to students that Texas is large enough to have a wide range of rainfall zones within its borders. Looking at the map, ask students which area of Texas they think is most likely to contain dense forests. Point out that the Piney Woods region receives between 45-55 inches of precipitation annually, the highest in the state, and averages about 245 days of growing season a year.

Step 2: Display the “Natural Regions and Subregions” of Texas map. Point out the Piney Woods subregion of the Gulf Coastal Plains region on the border between Texas and Louisiana. Explain that the East Texas Piney Woods is part of a pine forest that covers the entire southern United States from the Atlantic Ocean to Texas and today contains the Sam Houston, Davy Crockett, Angelina, and Sabine National Forests, as well as many commercial lumber companies and sawmills.

Step 3: Point out that at the beginning of the twentieth century, lumbering was the state's largest manufacturing enterprise, first among Texas industries in generating income, and the largest employer of labor in Texas. Today the Texas lumber industry continues to be a large and important contributor to the state economy.

Step 4: Have the students explore the Aldridge Sawmill site at: **www.texasbeyondhistory.net/aldridge/index.html**

Part 2

Step 1: Explain that in this part of the lesson, students will learn more of the Aldridge Sawmill story that they began in Part 1.

Step 2: Distribute the student handout, "Aldridge Sawmill: The Story in Numbers" or direct them to the Quizizz link to the online version (**https://quizizz.com/admin/quiz/6547f01110ed7c453dc81b51?source=quiz_share**). Direct students to circle the correct answer for each question. Students may work alone or with a partner.

Modification

Highlight pertinent information in each question and identify functions needed to answer each question and allow calculators.

Extension Activities

Have students view the following website: **www.texasbeyondhistory.net/kids/caddo/index.html**

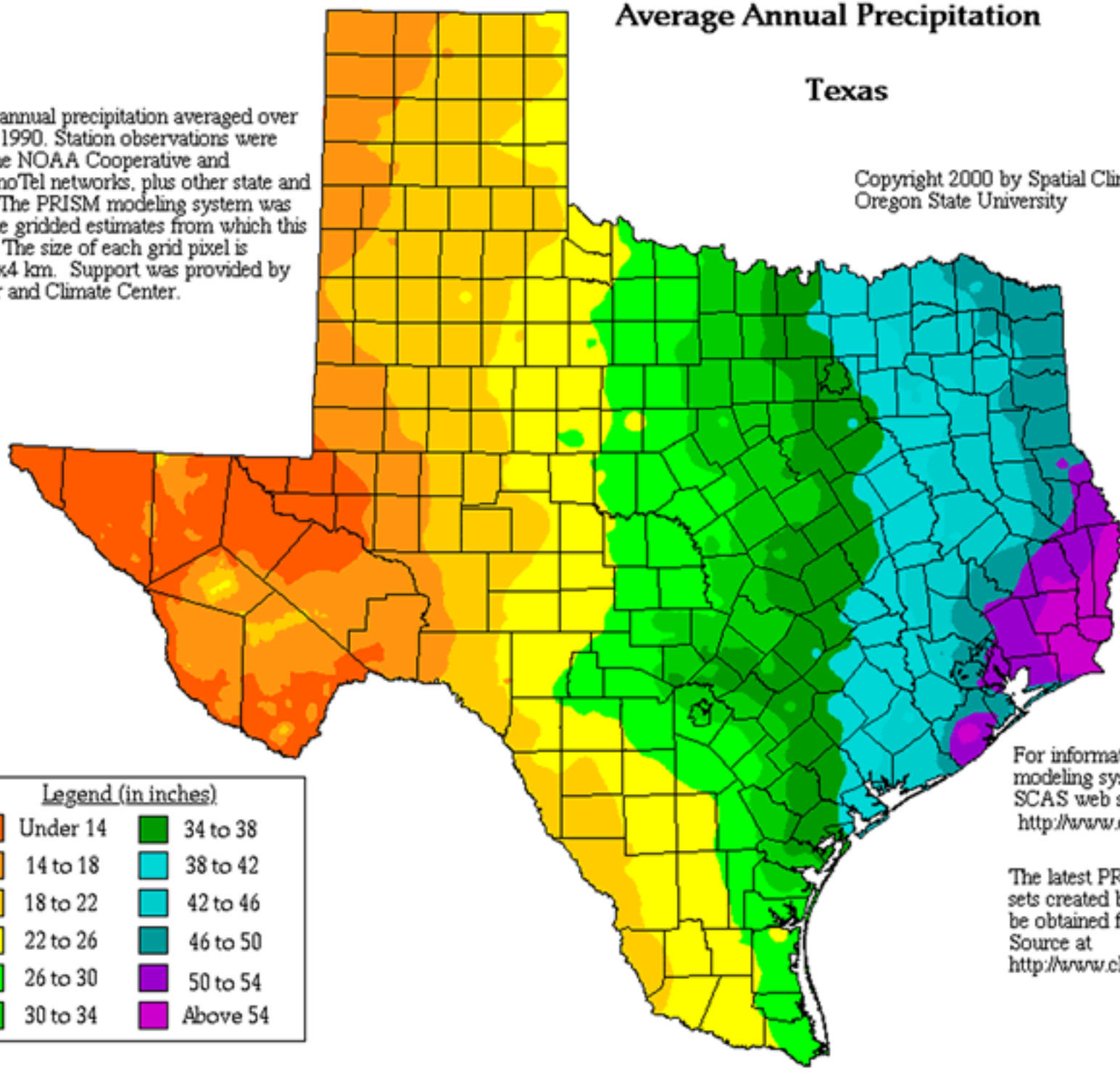
"World of the Caddo" is a children's exhibit on Texas Beyond History focused on perhaps the first "loggers" of East Texas, the Caddo Indians. In the section, "Living in Grass Houses," students can learn how these ancient people constructed huge beehive-shaped houses and temples using tall pine poles covered with bundles of grass. There is also a teacher's lesson plan keyed to "World of the Caddo."

Closure	Ask students what is meant by “Boom and Bust.” Have students brainstorm examples of products that have gone through a boom-and-bust cycle in their lifetime. If time allows, have students list all the mathematical functions they used to answer the handout questions and go over correct answers with students.
Assessment	Students will be expected to answer the ten math questions with at least 70% accuracy.
Student Product	Solutions to 10 math problems.

Average Annual Precipitation

Texas

This is a map of annual precipitation averaged over the period 1961-1990. Station observations were collected from the NOAA Cooperative and USDA-NRCS SnoTel networks, plus other state and local networks. The PRISM modeling system was used to create the gridded estimates from which this map was made. The size of each grid pixel is approximately 4x4 km. Support was provided by the NRCS Water and Climate Center.



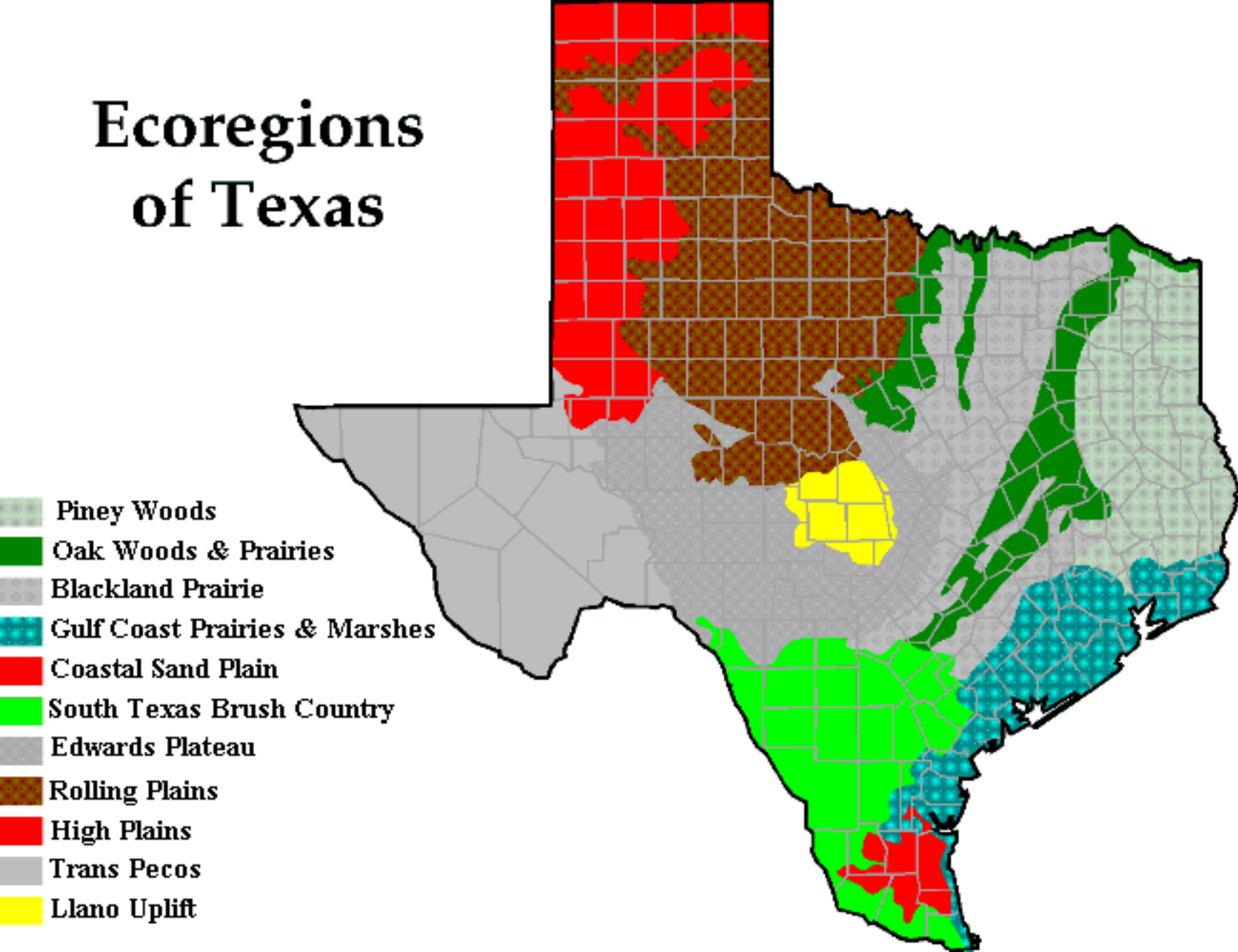
Legend (in inches)

Under 14	34 to 38
14 to 18	38 to 42
18 to 22	42 to 46
22 to 26	46 to 50
26 to 30	50 to 54
30 to 34	Above 54

For information on the PRISM modeling system, visit the SCAS web site at http://www.ocs.orst.edu/prism

The latest PRISM digital data sets created by the SCAS can be obtained from the Climate Source at http://www.climatesource.com

Ecoregions of Texas



Aldridge Sawmill – The Story in Numbers

Deep within the pine forests of East Texas, a few ruined buildings are all that remain of what was once Aldridge, a bustling sawmill and neatly laid-out company town much like many other early lumber factories in the east Texas Piney Woods.

An estimated 615 sawmills were operating in Texas in 1910. The impact of this activity was dramatic. Approximately 18 million acres worth of "Pineywoods" timber was cut during the 50 years between 1880 and 1930 and most of the pristine pine forests were cut out within a few decades.

Visit the Aldridge exhibit at **http://www.texasbeyondhistory.net/aldridge/index.html** and learn more about the Aldridge Sawmill story by answering the following questions.

1. Hal Aldridge began building the Aldridge sawmill in 1903, completing construction in 1905. Before the sawmill burnt to the ground in 1911, it was producing 75,000 board feet of lumber daily. How many board feet of lumber could the sawmill produce in a 5 day week?
   a. 37,500
   b. 375,000
   c. 3,750,000

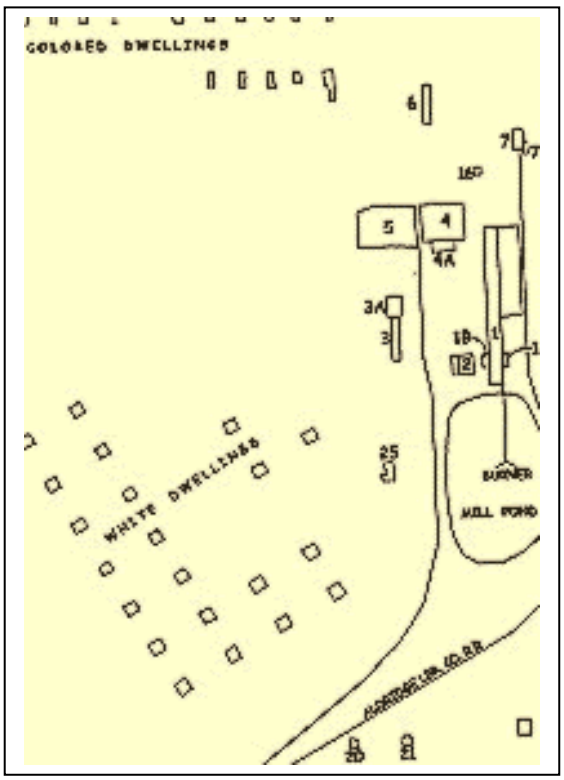
A board foot of lumber equals 144 cubic inches of wood. A 1” X 6” X 24’ board would equal a board foot, as would a 2” x 12” x 6’ board, etc.

2. If the Aldridge sawmill operated 261 days a year, how many board feet of lumber could it produce in a year?
   a. 19,575,000
   b. 195,750
   c. 195,750,000

Lumber planks are loaded into boxcars for distribution in this 1907 scene at the Diboll mill. Photo courtesy of The History Center, Diboll.

3. By 1912, the burned sawmill had been rebuilt. In a short time it was producing 125,000 board feet of lumber a day. Compared to the sawmill that burned, how many more board feet of lumber was the new sawmill producing daily?

a. 25,000
b. 200,000
c. 50,000



4. On a 1911 map of the Aldridge community, there were 3 areas for “white” residents and three areas for “colored” residents. It is believed that each house in both areas had 4 rooms and every 2 houses shared a well. If there were 20 houses per area, how many houses were there in the entire Aldridge community?

a. 136
b. 98
c. 120

5. By 1913, between 1000 and 1500 people lived in 200 company houses in the Aldridge community. What was the mean (average) number of people living at Aldridge?

a. 2600
b. 1250
c. 500

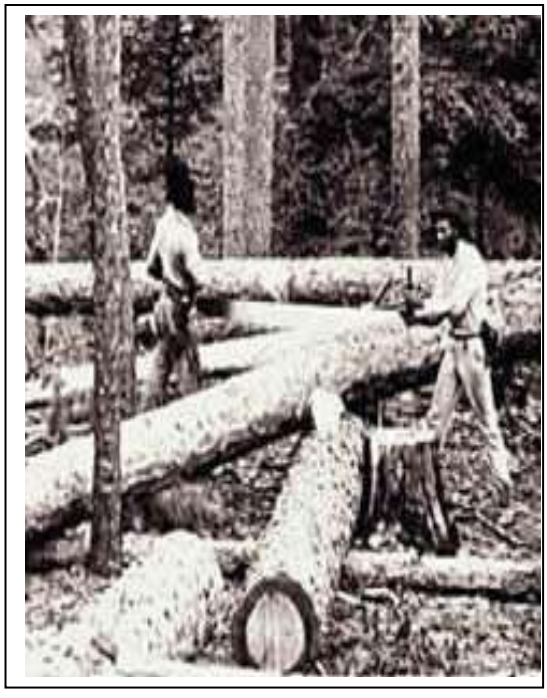
A family poses on the front porch of their company house in a milltown.
Photo courtesy Stephen F. Austin State University, Forest History Collections.

6.The “punch out” tokens seen here were paid to Aldridge employees and could be redeemed in the Aldridge store for a 10% to 20 % discount on merchandise. If an employee used a 20% token to purchase groceries costing $5.86, how much discount would he receive?

a. $ 2.90
b. $.58
c. $1.17

7. Using his 20% discount token, how much would he have to pay for his groceries?

a. $5.66
b. $4.69
c. $2.76



8. Approximately 18 million acres worth of Pineywoods timber was cut during the "Bonanza" period between 1880 and 1930, an amount estimated to be the equivalent of 59 billion board feet of lumber. What was the mean number of board feet of lumber cut per year during the “Bonanza” period?

a. 11,800,000
b. 118,000
c. 1,180,000,000

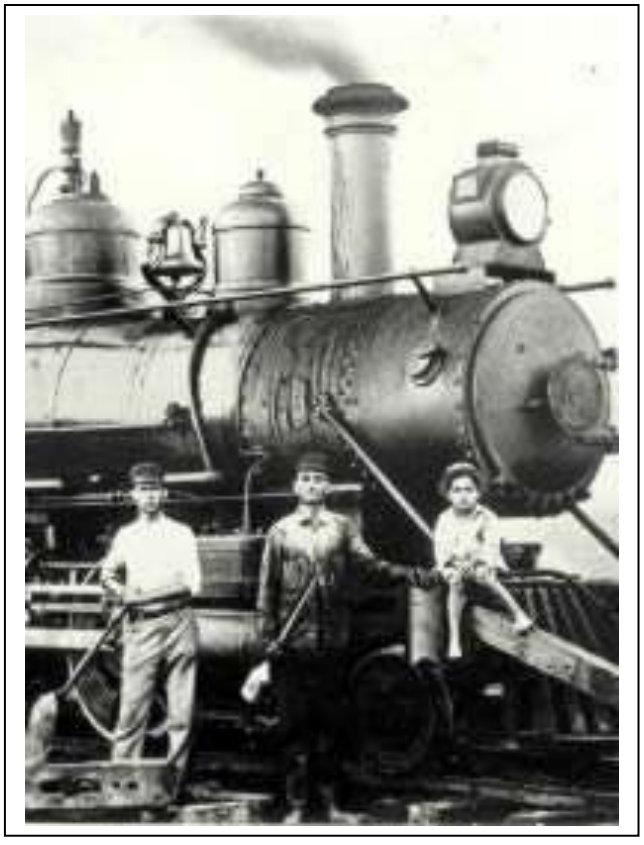
Photo, circa early 1900s, courtesy of Center for American History, UT-Austin.

9. In 1919, a third and final fire ended business at the Aldridge saw mill. In 1941, the U.S. Forest Service started replanting pine trees in the area next to Aldridge sawmill, and continued planting until 1984. How long did it take the Forest Service to replant the Aldridge area?

a. 43 years
b. 22 years
c. 65 years

10. Today, four species of pine timber found in East Texas are harvested commercially: longleaf pine, shortleaf pine, loblolly pine, and slash pine. Of these, the first three are native species. Shortleaf, or yellow pine, currently covers 30,000 square miles of Texas forest. If the entire state of Texas covers 267,000 square miles, approximately what percent of the state is covered in yellow pine?

a. 8%
b. 22%
c. 11%



Transporting both logs and timber workers from forests to milltowns, trains and forest trams were a vital connection for the logging business in East Texas. Photo courtesy of The History Center, Diboll.

Aldridge Sawmill – The Story in Numbers
Answer Key to Student Handout

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