

Clothesline Sleuth

Utah Social Studies



Materials

- ◆ Student Worksheets A, B, & C
- ◆ Teacher Answer Sheets B & C

Background

Agriculture does more than just feed us. It also puts clothes on our backs. Your blue jeans and T-shirts are made from cotton fibers which grow in the **boll**, or seed pod, of the cotton plant. Cotton is the most common natural textile in use today. In the year 2000, 17 million bales of cotton were grown in the United States. Each **bale** of cotton weighs about 480 pounds and is the size of a refrigerator! All those cotton bales were sold for 4.7 billion dollars...that's a lot of cotton to be sold at 56 cents per pound.

Two kinds of cotton are grown in the U.S., Upland and American-Pima cotton. Pima cotton has a longer fiber and makes a softer fabric, but it is only grown in Arizona, California, New Mexico and Texas. Upland cotton is grown in 18 states; Alabama, Arizona, Arkansas, California, Florida, Georgia, Kansas, Louisiana, Mississippi, Missouri, New Mexico, North Carolina, Oklahoma, South Carolina, Tennessee, Texas and Virginia. Texas is our leading cotton-producing state.

The early settlers in Utah tried to grow cotton. Southern Utah has great soils and climate for growing cotton, but the early settlers learned that Utah did not have enough water for growing this thirsty plant. It was much easier to purchase cotton from other Western states than to get enough irrigation water for the crop.

Another important fiber is **wool**. Wool is produced by sheep. In 2001 there were 390,000 sheep sheared for wool in Utah. They produced 3.1 million pounds of wool. The top wool-producing states in the U.S. are Texas, Wyoming, California and Montana. Each of these states contributes millions of pounds of wool annually.

People have been making fabric for thousands of years. Early Egyptian civilizations used **flax** (a plant) to make linen. Even vikings made their sails from home-spun wool. By coating it with tar and animal fats they were able to make their sails "waterproof" and they became great explorers of the oceans.

You can find out what your clothes are made from by looking at the garment's label. By law, each garment must be labeled to show the generic name of the fabric from which the garment is made, the percentages of fibers present, the manufacturer's name or registered identification number, the country where the product was made, and the instructions for caring for the garment. Sometimes this information will be on more than one label.

Most fabrics are made from yarns that are formed by twisting or spinning many fibers together. The more the fibers are twisted, the stronger the yarn will be. Besides clothing, fibers are also used for making toothbrushes, tires, tea bag strings, mops, tents, baseballs, fishing line, and many other things you use every day.

Time: 1 hour

Grade Levels: 5-6

Grade 5 Social Studies, Standard 1

Students will understand how the exploration and colonization of North America transformed human history.

Objective 2

Assess the global impact of cultural and economic diffusion as a result of colonization.

- Describe the cultural and economic impacts that occurred as a result of trade between North America and other markets (e.g., arts, language, ideas, the beginning and expansion of the slave trade, new agricultural markets).

Objective 3

Distinguish between the rights and responsibilities held by different groups of people during the colonial period.

- Compare the varying degrees of freedom held by different groups (e.g. American Indians, landowners, women, indentured servants, enslaved people).

Social Studies, Standard 4

Students will understand that the 19th century was a time of incredible change for the United States including geographic expansion, constitutional crisis, and economic growth.

Objective 2

Assess the geographic, cultural, political and economic divisions between regions that contributed to the Civil War

- Describe the impact of physical geography on the cultures of the northern and southern regions (e.g. industrial resources, agriculture, climate).

More standards can be found on the next page.

Activity Procedures

1. String a cotton cord across the top of a blackboard to resemble a clothesline.
2. Bring a variety of clothing articles to class made from a variety of fabrics, both natural and synthetic. Use clothespins to hang all the clothes on the clothesline.
3. Share background materials and lead a discussion of the origins of fabrics. Ask students if they know the origins of the clothes they are wearing. Ask why we are more likely to wear wool when it is cold and cotton when it is hot (wool provides insulation and cotton releases body heat). Have them try to trace the clothing back from department store to manufacturer to field.
4. Hand out student worksheets. Have students read the information printed on Student Worksheet A and find the definitions for vocabulary words on Student Worksheet B. Then have students look in the dictionary for words they were unable to identify.
5. Have students answer the questions on Student Worksheet C by using dictionaries, encyclopedias, and Student Worksheet A.
6. Divide students into groups of four or five. Assign one article of clothing from the clothesline to each group. Have each group study the garment label and determine what it is made from.
7. Have each group use encyclopedias, dictionaries, and other library resources to gather information about the material from which the garment is made. Students should answer the following questions as they research the garment:
 - * What raw materials were used to make this material?
 - * Is this a natural or synthetic material?
 - * Is this a material that is grown in Utah?
 - * What process is used to produce this material?
8. Have each group prepare a report on the garment's origins to present to the class. As each group makes its report, one group member should hang the article of clothing back on the clothesline.

Adapted from Oklahoma Agriculture in the Classroom.

Grade 6

Social Studies, Standard 1

Students will understand how ancient civilizations developed and how they contributed to the current state of the world.

Objective 1

Explain why physical geography affected the development of early civilizations.

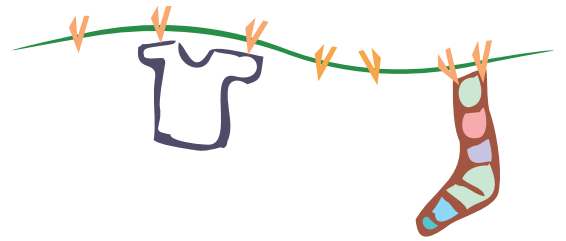
- b. Describe how these features influenced the success or decline of the civilizations.



Name _____

Clothesline Sleuth A

Read the information below and use it to match the vocabulary words to their correct definitions on Student Worksheet B. Then, answer the questions on Student Worksheet C.



Your jeans, shirts, socks, and sweaters are all made from textiles. Some textiles are made from the **natural fibers** of plants and animals. **Cotton** is made from fibers gathered from the seed pod or **boll** of the cotton plant. **Wool** fabric is made from the wool of sheep and **llamas**. **Mohair** is made from the long hair of goats. **Silk** comes from the long threads the silkworm produces when it weaves its cocoon. Other textiles are made from **synthetic fibers**. Synthetic fibers are produced from chemicals, usually petrochemicals.

Up until the 20th Century, all textiles were made from natural fibers. Since natural fibers decompose over time, very little evidence has survived to show what kinds of clothing people wore many thousands of years ago. The earliest known textiles were **linen**. Linen is made from the fibers of the flax plant. In Switzerland **archaeologists** dug up bundles of flax fibers and yarns and pieces of woven linen fabric. They think these objects are about 7,000 years old. In Mesopotamia, they found wool fabrics that were about 4,000 years old. Cotton was first used for clothing in India, Egypt, China, Mexico, and Peru. **Silk** has been used in China for over 4,000 years.

Late in the 19th Century, scientists started trying to imitate silkworms by inventing a fiber that was similar to silk. In 1884, the French inventor Hilaire de Chardonnet invented **rayon**, the first synthetic fiber. Rayon is made from wood pulp that has been chemically treated. **Nylon** was the first fiber made completely from chemicals. In the production of nylon and other synthetic fibers, certain products of oil refining are combined into a syrupy substance and forced through the tiny holes of a plate called a **spinneret**.

Today, textiles are made from both natural and synthetic fibers. Sometimes natural and synthetic fibers are blended together. The most commonly-used plant fiber is cotton. Cotton is a major crop grown across the United States. The short, fluffy fibers of the cotton boll must be separated from the seed before they can be used. This was difficult until Eli Whitney invented the **cotton gin** in 1793. The cotton gin made it easier and faster to clean cotton after it had been picked. After that, people all over the United States and Europe began wearing clothes made from cotton.

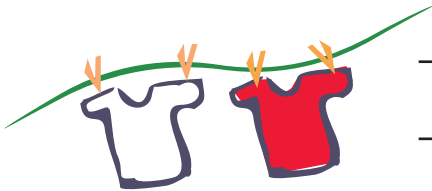
Before the invention of the cotton gin, most people wore clothes made from wool or linen. Wool is still a popular fiber for making clothes. Sheep and llamas are raised on Utah farms for their wool. Linen is also still in use but is very expensive because it is difficult to make.

Name _____

Clothesline Sleuth B

Read the information on Student Worksheet A. Then, match the words with the definitions by writing the correct number in the space provided.

- | | | |
|----------------------|-------|---|
| 1. cotton gin | _____ | Fibers obtained from plants or animals. |
| 2. petrochemicals | _____ | Fibers made from chemicals rather than natural sources. |
| 3. yarn | _____ | A plant grown in warm climates for the fibers surrounding its seeds. |
| 4. rayon | _____ | A machine that separates the seeds, seed hulls and other small objects from the fibers of cotton. |
| 5. natural fibers | _____ | A woven fabric made from the inner bark of the flax plant. |
| 6. cotton | _____ | A plant grown for its fiber, used in making linen, and for its seed, used to make linseed oil. |
| 7. textiles | _____ | A continuous strand of twisted threads of natural or synthetic materials. |
| 8. spinneret | _____ | A synthetic fiber produced from wood pulp that has been chemically treated. |
| 9. archaeologist | _____ | The fine, soft, wavy, protective coat of domestic sheep and certain other animals. |
| 10. wool | _____ | South American animal related to the camel and raised for its soft, fleecy wool and as a beast of burden. |
| 11. llama | _____ | Chemicals made from petroleum products. |
| 12. synthetic fibers | _____ | A plate pierced with holes through which plastic material is pushed to produce synthetic fibers. |
| 13. linen | _____ | Cloth made by interlacing yarns on a loom. |
| 14. woven | _____ | Fabric that is woven or knitted. |
| 15. cotton bolls | _____ | The rounded seed pod of the cotton plant. |
| | _____ | Someone who looks for and studies material evidence from past human life and culture. |



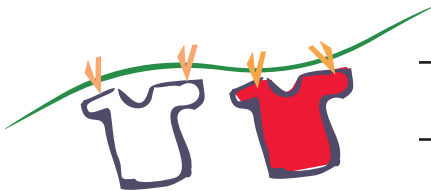
Name _____

Clothesline Sleuth B

(Answers)

Read the information on Student Worksheet A. Then, match the words with the definitions by writing the correct number in the space provided.

- | | | |
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| | ___ | Someone who looks for and studies material evidence from past human life and culture. |



Name _____

Clothesline Sleuth C

Read the information on Student Worksheet A to answer the following questions.

1. Cotton was first used to make clothing in what five countries?

Find these countries on a world map.

2. What invention helped make cotton more important than linen or wool as a material used to make clothing?

3. Find Switzerland on the world map. Archaeologists have found the first evidence of which fiber in Switzerland?

How many years old do archaeologists think this material is?

4. Look up Mesopotamia in an encyclopedia. Name the country that is located where Mesopotamia once was located.

Find that country on the world map. Archaeologists found the first evidence of which fiber in Mesopotamia?

5. Scientists were trying to imitate what when they first began developing synthetic fibers?

6. A spinneret is a plate filled with holes used for making synthetic fibers. The chemical substance is pushed through the holes to form threads. Spinneret is also the name for a part on the body of some insects. Look in the dictionary to find out what part of the insect's body it is.

What does the insect use it for?

Why do you think scientists decided to give this name to the device used for making synthetic fibers?

7. Look up the words "alpaca" and "vicuna" in the dictionary or encyclopedia. What do these animals have in common with the sheep and llama?

Look on the map to find where each of these animals lives.

Name _____

Clothesline Sleuth

C

(Answers)

Read the information on Student Worksheet A to answer the following questions.

1. Cotton was first used to make clothing in what countries? Cotton was first used to make clothing in India, Egypt, China, Mexico, and Peru. Find these countries on a world map.
2. What invention helped make cotton more important than linen or wool as a material used to make clothing? The cotton gin helped make cotton more important than linen or wool as a material used to make clothing.
3. Find Switzerland on the map. Archaeologists have found the first evidence of which fiber in Switzerland? Archaeologists have found the first evidence of linen fibers in Switzerland.

How many years old do archaeologists think this material is? Archaeologists believe the linen fibers they found in Switzerland are 7,000 years old.

4. Look up Mesopotamia in an encyclopedia. Name the country that is located where Mesopotamia once was located. Iraq is located in the area once covered by Mesopotamia.

Find that country on the world map. Archaeologists found the first evidence of which fiber in Mesopotamia? Archaeologists found the first evidence of wool fiber in Mesopotamia.

5. Scientists were trying to imitate what when they first began developing synthetic fibers? Scientists were trying to imitate the silkworm when they first began developing synthetic fibers.
6. A spinneret is a plate filled with holes used for making synthetic fibers. The chemical substance is pushed through the holes to form threads. Spinneret is also the name for a part on the body of some insects. Look in the dictionary to find out what part of the insect's body it is. Spinneret is the name for the back end of the body of some insects.

What does the insect use it for? Some insects secrete silky filaments with the spinneret.

Why do you think scientists decided to give this name to the device used for making synthetic fibers? The device used for making synthetic fibers is called a spinneret because scientists used it to imitate the process the silkworm uses to make silk.

7. Look up the words "alpaca" and "vicuna" in the dictionary or encyclopedia. What do these animals have in common with the sheep and llama? The alpaca, vicuna, and sheep all have wool covering their bodies.

Look on the map to find where each of these animals lives. Sheep live all over the world. Llamas, alpaca, and vicuna are from South America.