

Clothesline Sleuth

Wyoming Social Studies, Language Arts

Objectives:

- Students will gain an understanding of the importance of flax, cotton, wool and other processes for making fabric.
- Students will understand that the process of making fabric has been an important industry for the United States and the world.

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.

Another important fiber is wool. Wool is produced by sheep. In 2002 there were 420,000 sheep sheared for wool in Wyoming. They produced 3.75 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.



Standards

Social Studies

Culture/Cultural Diversity:
2.2

Production, Distribution
& Consumption:
3.1, 3.3

Time, Continuity & Change:
4.1, 4.3

Social Studies

5th Grade:

Reading: 1.1A, 1.1B,
1.1C, 1.1D, 1.1E

6th Grade:

Reading: 1.1A, 1.1B,
1.1C,

Materials

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

Estimated Time

60 Minutes

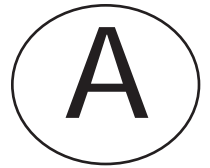
Grades 5-6

notes:

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.

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 Wyoming?
 - 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.



Clothesline Sleuth

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.

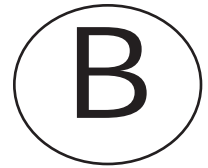
Your jeans, shirts, socks, and sweaters are all made from textiles. Some textiles are made from the natural fibers of plants and animals. Cotton is made from fibers gathered from the seed pod or boll of the cotton plant. Wool fabric is made from the wool of sheep and llamas. Mohair is made from the long 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 are raised on Wyoming farms for their wool. Linen is also still in use but is very expensive because it is difficult to make.



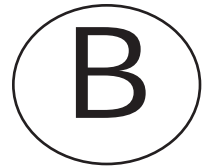
Clothesline Sleuth

Match the words with the correct 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 cotton fibers. |
| 5. natural fibers | _____ | A woven fabric made of 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 soft, fine, wavy protective coat of domestic sheep and certain animals. |
| 10. wool | _____ | South American animal related to the camel and raised for its soft, fleecy wool. |
| 11. llama | _____ | Chemicals made from petroleum products. |
| 12. synthetic fibers | _____ | A plate pierced with holes in which plastic material is pushed through to produce synthetic fibers. |
| 13. linen | _____ | Cloth made by interlacing yarns on a loom. |
| 14. woven | _____ | Fabric that is woven or knitted. |
| 15. cotton balls | _____ | The rounded seed pod of the cotton plant. |
| | _____ | Someone who looks for and studies material evidence from past human life and culture. |

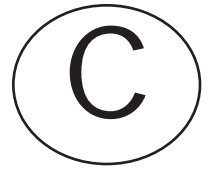
ANSWER SHEET

Clothesline Sleuth



Match the words with the correct definitions by writing the correct number in the space provided

- | | |
|----------------------|--|
| 1. cotton gin | <u>5</u> Fibers obtained from plants or animals. |
| 2. petrochemicals | <u>12</u> Fibers made from chemicals rather than natural sources. |
| 3. yarn | <u>6</u> A plant grown in warm climates for the fibers surrounding its seeds. |
| 4. rayon | <u>1</u> A machine that separates the seeds, seed hulls, and other small objects from cotton fibers. |
| 5. natural fibers | <u>13</u> A woven fabric made of the inner bark of the flax plant. |
| 6. cotton | <u>16</u> A plant grown for its fiber, used in making linen, and for its seed, used to make linseed oil. |
| 7. textiles | <u>3</u> A continuous strand of twisted threads of natural or synthetic materials. |
| 8. spinneret | <u>4</u> A synthetic fiber produced from wood pulp that has been chemically treated. |
| 9. archaeologist | <u>10</u> The soft, fine, wavy protective coat of domestic sheep and certain animals. |
| 10. wool | <u>11</u> South American animal related to the camel and raised for its soft, fleecy wool. |
| 11. llama | <u>2</u> Chemicals made from petroleum products. |
| 12. synthetic fibers | <u>8</u> A plate pierced with holes in which plastic material is pushed through to produce synthetic fibers. |
| 13. linen | <u>14</u> Cloth made by interlacing yarns on a loom. |
| 14. woven | <u>7</u> Fabric that is woven or knitted. |
| 15. cotton balls | <u>15</u> The rounded seed pod of the cotton plant. |
| | <u>9</u> Someone who looks for and studies material evidence from past human life and culture. |



Clothesline Sleuth

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

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.

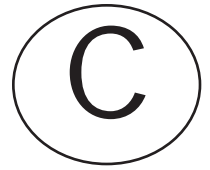
Look in the dictionary to find out what part of the insect's body it is.

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?

ANSWER SHEET



Clothesline Sleuth

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

- 1). Cotton was first used to make clothing in **India, Egypt, China, and Peru.**
Find these countries on a world map.

- 2). The **Cotton Gin** helped make cotton more important than linen or wool as a material used to make clothing?

- 3). Archaeologists have found the first evidence of **linen** in Switzerland.
Find Switzerland on the world map.
Archaeologists think this material is **7000 years old.**

- 4). Look up Mesopotamia in an encyclopedia.
Iraq is the country that is located where Mesopotamia once was located.
Find that country on the world map.

Archaeologists found the first evidence of **wool** fiber in Mesopotamia.

- 5). Scientists were trying to imitate the **silkworm** when they first began developing synthetic fibers?

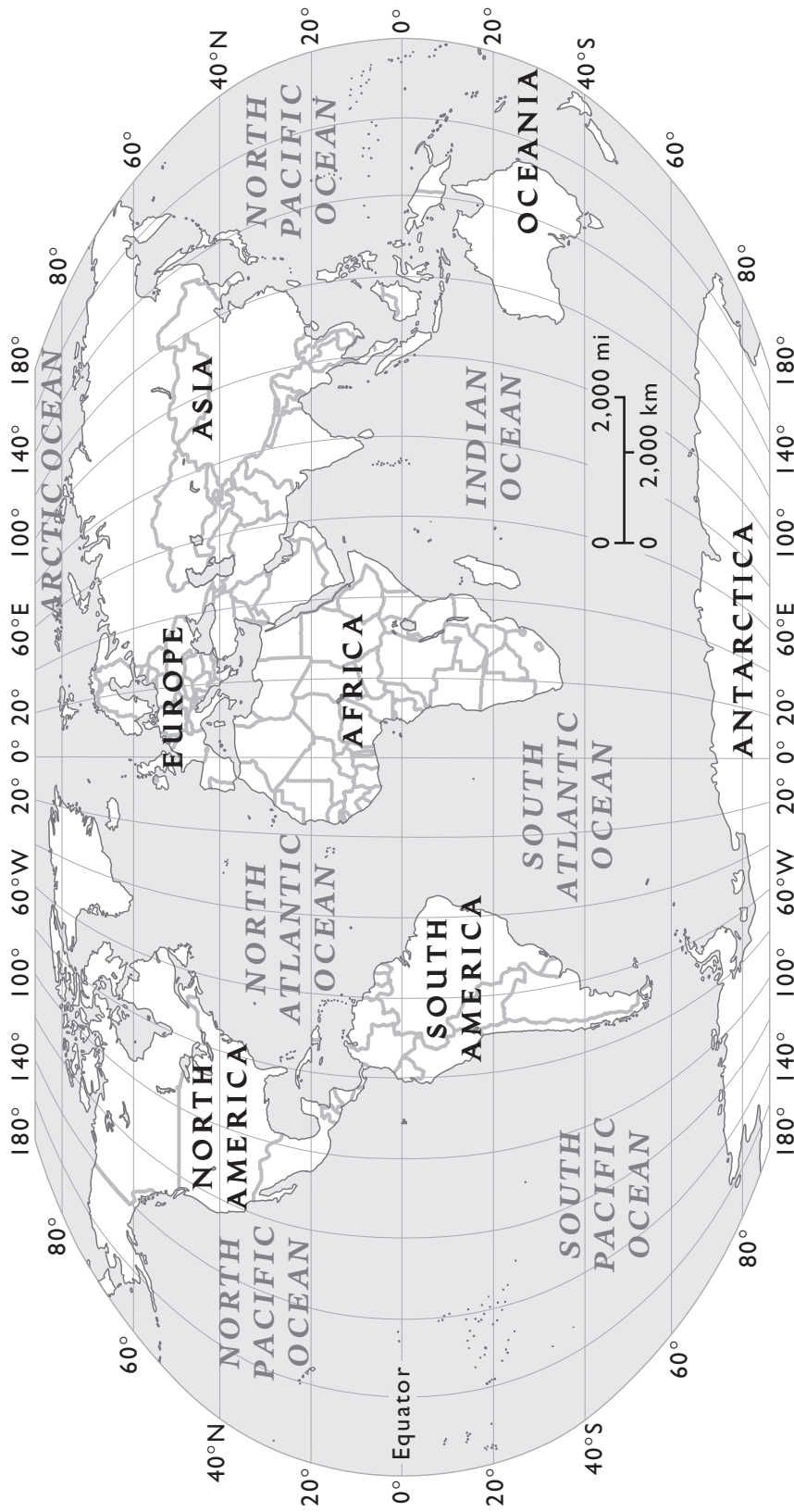
- 6). A spinneret is a plate filled with holes used for making synthetic fibers. The chemical substance is pushed through the holes to form threads. Spinneret is also the name for a part on the body of some insects.
The spinneret in on the back end of an insect.

The insect uses it **to secrete silky filaments** with the spinneret.

The device used for making synthetic fibers is called a spinneret because **it imitates the process that the silkworm uses to make silk.**

- 7). **Sheep live all over the world, alpaca, vicuna, & llamas are from South America. All these animals have wool covering their bodies.**

THE WORLD



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