



Cotton—The Fabric of Our Lives (1st Grade)

Purpose

Students will be able to explain how cotton is produced and used, identify various cotton products, and use graphing to determine the importance for using cotton products.

Subject Area(s)

English Language Arts, Social Studies, Math

Common Core/Essential Standards

English Language Arts

- **CCSS.ELA-Literacy.RL.1.1** Ask and answer questions about key details in a text.
- **CSS.ELA-Literacy.RL.1.7** Use illustrations and details in a text to describe its key ideas.
- **CCSS.ELA-Literacy.SL.1.1.A** Follow agreed-upon rules for discussion (e.g., listening to others with care, speaking one at a time about the topics and texts under discussion).
- **CCSS.ELA-Literacy.SL.1.2** Ask and answer questions about key details in a text read aloud or information presented orally or through other media.

Social Studies

- **1.E.1.2** Identify examples of goods and services in the home, school and community.

Math

- **1.MD.1** Order three objects by length; compare the lengths of two objects indirectly by using a third object.
- **1.MD.2** Express the length of an object as whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.
- **1.MD.4** Organize, represent, and interpret data with up to three categories, ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.
- **1.OA.5** Understand subtraction as an unknown-addend problem.
- **1.OA.6** Add and subtract within 20, demonstrating fluency for addition and subtraction within 10.

Agricultural Literacy Outcomes

Plants and Animals for Food, Fiber & Energy

- Explain how farmers/ranchers work with the lifecycle of plants and animals to harvest a crop.
- Identify examples of feed/food products eaten by animals and people.

Food, Health, and Lifestyle

- Recognize that agriculture provides our most basic necessities: food, fiber (fabric or clothing), energy, and shelter.

Science, Technology, Engineering & Mathematics

- Recognize and identify examples of simple tools and machines used in agricultural settings.

Culture, Society, Economy & Geography

- Explain why farming is important to communities.
- Trace the sources of agricultural products (plant or animal) used daily.

Essential Questions

1. How is cotton used?
2. Why is cotton important?
3. What are graphs?
4. Name the differences between a pie graph, line graph and bar graph.

Vocabulary

Cotton boll: the white, fluffy part of cotton containing seeds and cotton fiber.

Cotton gin: machine that pulls seeds out of cotton bolls, cleans and dries the cotton.

Thread: cotton that has been combed into thin ropes used to make clothing.

Yarn: thread that has been spun to be used for knitting, weaving or sewing.

Graph: a drawing that shows mathematical information using lines, shapes or colors.

Bar Graph: a graph that uses rectangles to show a value.

Line Graph: a graph that uses lines to show a value.

Pie/Circle Graph: a circular graph that is divided up in sections in order to show values.

Student Motivator

Ask the students to *name some items that are made from cotton*. Most students will say clothes, towels, etc. Share with the students that dollar bills, feed for animals, stuffing for furniture, cooking oil are also made from cotton. Discuss the fact that cotton is used in making tee shirts; however it is also used to make jeans. Ask the students, *Where does cotton come from?* Some students may answer that cotton

comes from a cotton plant. Ask, *who grows the cotton plant?* Explain that farmers grow cotton. Tell the students that you are going to share a book with them that explains how cotton is taken from the farm and processed in order to make clothing.

Background Knowledge

Today, the world uses more cotton than any other fiber and it is a leading cash crop (something that is grown for profit, rather than for use by the farmer) in the United States.¹ All parts of the cotton plant are useful, but the most important is the fiber which is used in making cotton cloth. Cotton is harvested in late September, October and November in the Piedmont and Coastal Plains of North Carolina. Cotton picking machines are used to collect the *cotton bolls* from the plants, and then the stalks are cut down and turned under the soil.

In 1793, Eli Whitney of Massachusetts created the *cotton gin*. Before the gin was created, people hand-picked the cotton from the plant, and then would separate the seeds from the bolls. This invention made the value of U.S. cotton crop rise from \$150,000 to more than \$8 million dollars within ten years.¹

After cotton is picked, sorted, and cleaned it goes on to many different uses. The seeds are sold to oil mills, where the seed casings are removed, and plastics are made. The seed itself gets processed into cottonseed oil and meal (flours) used in livestock feed. The cotton itself goes to clothing manufacturers after the cotton is combed and spooled into *yarns* and *threads*.

The activities below will cover the book, *From Cotton to T-Shirt* written by Robin Nelson. The students will review all of the ways cotton is used, and manufactured. They will also learn about graphs through an interactive activity using pictures of cotton products.

Materials

- *From Cotton to T-Shirt*, book written by Robin Nelson
- String or Crepe paper
- Colored pencils, crayons, pens, etc.

Procedures

Activity 1: *From Cotton to T-Shirt*

1. Read the book, *From Cotton to T-Shirt* written by Robin Nelson to the students. Ask the students, *what are some of the cotton products shown in the book, From Cotton to T-Shirt?* Deepen the thought process and ask, *what would happen if we didn't have cotton?*

2. Pair the students up and have the pairs share one fact about cotton that they learned from the book. Tell the pairs to make sure each student has a chance to share their fact. Each pair will share each other's fact with the class.
3. Give one of the vocabulary words to each pair and ask them to define the word: ***cotton boll, cotton gin, thread***. Allow each pair to share their definition with the class. To review, find the pages with the vocabulary word in *From Cotton to T-Shirt*, and re-read those pages.
4. Show the [Cotton Gin Cart Demonstration video](#) to the class. Ask the students to discuss the differences between old wooden cotton gins, and the modern metal machines.
5. Lastly, show the students the [How It's Made Cotton video](#)
6. Use question 2 from the *Essential Questions* to evaluate the student's understanding from the two videos.

Activity 2: Cotton Corners

1. Place the *Cotton Product pictures* in each corner, or at various stations in the classroom. Students will pick one as their favorite, and go to the station where the picture of that product is located.
2. At each station, students will discuss their favorite cotton product with their fellow classmates choosing that station. Encourage students to use proper grammar in their speech and practice good conversation etiquette (only one student speaking at a time, listening to others, etc.).
3. Call on students in each group to share the various reasons given for each cotton product. Ask students to share one reason from another student in their group.
4. Once the students have returned to their desks, give each student a *T-Shirt outline*. Tell the student to draw a design on their outline that shows one of the stages of cotton illustrated in *From Cotton to T-Shirt* and the [How It's Made Cotton video](#). For example, they could draw a cotton gin, cotton plant, yarn or any type of cotton product on their shirt.
5. Have each student present their T-shirt designs to the class and give supporting reasons why they selected their design.

Activity 3: Measuring with Human Bar Graphs

1. Place the students in their Cotton Corner groups, have one student in each group hold that group's picture and the others in that group form a line from back to front (the person at the back of the line will have his/her back against the wall; the other group members will line up one-by-one, facing away from the wall, with the person in the front of the line holding the picture).
1. Have all of the groups line up this way, next to each other against the wall. Have one student step out of line (preferably someone in the middle of the line so as not to disturb the length), and take the string or crepe paper and trace the length of the line of students from the student at the wall,

to the student in the front of the line. Allow the student to step out of their lines (but tell them to remember where they were standing, as they will return to that spot) to observe the lines of string.

2. Ask the students to measure the length of the string using the length of their hands. Each student will use each of their hands (palm to fingertip) to measure the length of their string. Ask the students to count the number of hands it takes for each string line.
3. When the students have a number of hands for each line, write the numbers on the board for the students to see. Explain to the students that each number represents the size of the line that was measured.
4. Ask the students to get back in their lines. Have one student continue the string around the top of each line and back down the opposite side to the wall (forming the “bars” of the bar graph).
5. Once the outlines of each line have been made, have the students tell you why some “bars” are longer than others.
6. The reasoning is that more students liked one picture over another, making the bars longer. Explain that the class has created a bar graph that expresses students’ preferences. Tell the students that a graph is a picture that represents numerical facts. Remind them of the measurement numbers they took with their hands. Explain that each “bar” represents that number. Show the students the picture of the bar graph.

Activity 4: Measuring with Human Line Graphs

1. Have the students return to the bar graph formation. Hand the first person in the first row the end of a ball of string or roll of crepe paper. Walking in front of each row, have the first person take hold of the string or paper, ending with the person at the front of the last row.
2. Ask the class, *what graph have you formed now?* Tell them they have formed a line graph (representing quantities). Ask the students, *how is the line graph different than the bar graph?*
3. Explain that the bar graph and the line graph both represent the same information but in different ways. Show the students the picture of the line graph so they can see the type of chart they are creating.
4. Next, show the students the numeric values of each line (that were written on the board from the bar graph activity).
5. Have each group find the difference between the group next to them (they will be taking the larger number and subtracting the smaller number to find the difference).
6. Illustrate that Group 1 had three less students than Group 2, or Group 2 had two more students than Group 1, etc. Then, explain that they can reach the original number for each group by adding the number back (For example, subtract $10-8$ by finding the number that makes 10 when added to 8).

Activity 5: Measuring with Human Pie/Circle Graphs

1. While still in their respective lines, have the students in each line join hands. Form a circle beginning with the students in the first line. As the teacher marches in a circle, the students in each line take the hand of the last person in the line ahead of them. Once all four groups/lines are in the full circle, have students drop their hands. The person holding the picture lays it on the floor in the middle of their group such that everyone in the circle can see it.
2. The teacher will move to the center of the circle holding four pieces of string or crepe paper. The first person in each group goes to the teacher and takes the end of one piece of string/paper and then returns to his/her place in the circle.
3. Show the students the picture of the pie graph, and explain that this is what they are creating.
4. Clarify with the class that each of the graphs created represents the same findings; that these are three different methods to show each value (number of students in each group).
5. Lastly, have the students draw representations of each graph style in their math journals. Ask them to use the numbers recorded on the board to label their graphs.

Suggested Companion Resources

- Cotton Incorporated
<http://www.cottoninc.com/>
- NCDA&CS Ag's Cool—Cotton
<http://www.ncagr.gov/agscool/commodities/cotonkid.htm>

Essential Files

- *From Cotton to T-Shirt*, book by Robin Nelson
- [Cotton product pictures](#)
- [Graph pictures](#)
- [T-Shirt outline](#)

Essential Links

- Cotton Gin Cart Demonstration
https://www.youtube.com/watch?v=JzHD7_dWEik
- How Its Made Cotton
https://www.youtube.com/watch?v=kH_b3Heo48I

Ag Facts

- A lighter sandier soil is best for growing cotton. Cotton does not grow well in highly organic soil.¹

- The research and marketing company representing cotton is called Cotton Incorporated, and the world headquarters is located in Cary, NC. ²
- In 2015, North Carolina produced over 520,000 bales of cotton. ³

Extension Activities

- Plan a field trip to visit Cotton Incorporated.
- Ask the students to compile a list of careers that involve cotton. Answers could be farmer, clothing designer, factory worker, etc. Ask the students to describe the job responsibilities for each career they list.

Sources & Credits (Site any information taken from another source in bullet form)

1. <http://www.ncagr.gov/agscool/commodities/cotonkid.htm>
2. <http://www.cottoninc.com/>
3. http://www.cotton.org/econ/cropinfo/cropdata/state_data.cfm?state=NC