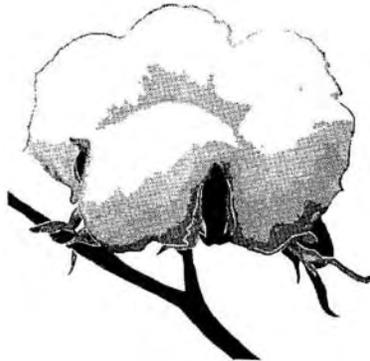
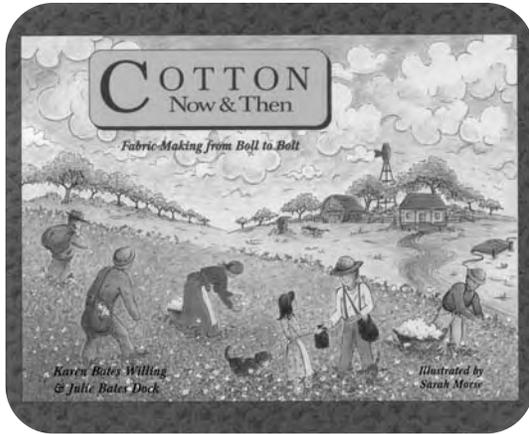


# Cotton

## Cotton Now & Then: Fabric Making from Boll to Bolt by: Karen Willing and Julie Dock



### Talking Points:

Cotton farmers plant cotton in the late spring. They use mechanical planters that can plant seed in as many as eight rows at a time. During the growing season, scouts go out into the fields to count harmful insects. If there are too many, the farmer will use pesticides to control them.

About two months after planting, flower buds, called **squares**, appear on the plant. Three weeks later the blossoms open. The petals change color as they mature. First, they are creamy white. Then, they turn yellow, then pink, and finally, dark red. After three days the red flowers wither and fall, leaving green pods called **cotton bolls**. The boll is shaped like a tiny football. Moist fibers grow and push out from the newly-formed seeds. As the boll ripens, it turns brown. The fibers continue to expand in the warm sun. Finally, they split the boll apart, and the fluffy cotton bursts out.

Cotton is harvested in the fall. Most of the cotton is harvested by machine. After the cotton is harvested, it is stored at the edge of the field in big mounds or loaded on trailers or trucks and carried to the **cotton gin**.

At the cotton gin, powerful pipes suck the cotton into the building and through cleaning machines that remove burs, dirt and leaf trash. Then circular saws with small, sharp teeth pull the fiber from the seed. The ginned fiber is called **lint**. The lint is pressed into 500-pound bales. The bales are sold to cotton merchants who sell them to textile mills in the U.S. or in foreign countries. At the textile mills, huge machines spin the cotton fibers into cotton thread. The thread is then woven into cloth on **looms**. The rolls of cloth that come off the looms are called **bolts**. Clothing manufacturers buy bolts of cloth and cut jeans, shirts, dresses, and other items of clothing for them to sew.

**Activity: From Bolls to Bolts**  
**Grade Level: 2nd - 4th**  
**Subject Area: Language & Visual Arts**

### Materials

Cotton bolls  
Articles made from cotton (cotton balls, cotton shirt, jeans, cotton thread, cotton swabs, towels, etc.)  
Unbleached muslin  
Commercial dye

### Vocabulary

**Bale** - large package of cotton tightly bound with twine or wire and often wrapped.  
**Bolt**-A large roll of cloth of a definite length, as it comes from the loom.  
**Cotton boll**-The rounded seed pod or capsule of the cotton plant.  
**Cotton gin**-A machine that separates the seeds, seed hulls and other small objects from cotton fibers.  
**Fiber**-A natural or synthetic filament, as of cotton, wool or nylon, capable of being spun into yarn.  
**Lint**-The mass of soft fibers surrounding the seeds of unginned cotton; fuzz.  
**Loom** - an apparatus for making thread or yarn into cloth by weaving strands together at right angles.  
**Square**-The flower bud of a mature cotton plant.  
**Textile**-Fiber or yarn for weaving or knitting into fabric.

## From Bolls to Bolts Activity Instructions:

- Bring a variety of articles to class that were made from cotton (cotton balls, a cotton shirt, a pair of jeans, cotton embroidery or crochet thread, cotton swabs, towels).
- Ask cotton producers or your county Extension office to help you acquire some cotton bolls, and bring them to class.
- Show students the items made from cotton and ask them to guess what they were made from.
- Show the cotton bolls to your students. Have them guess what they are and what they are for.
- Let students feel the cotton and try to pull the cotton lint from the cotton boll.
- Brainstorm adjectives to describe the cotton bolls.
- Have each student write an imaginative paragraph explaining how cotton clothing came to be made from cotton bolls.
- Have students share their theories with the class.
- Read *Cotton Now & Then: Fabric Making from Boll to Bolt* and discuss background material.
- Hand out student worksheets.
- Instruct students to read the sentences on the worksheet and place them in the proper order, using the time order words as clues. If desired, you may have students cut the sentences into strips and arrange them in order on their desks before writing the paragraph in the proper order.

## Farm Day Fun:

### Fun with Dye (2nd and up)

#### Materials:

- Unbleached muslin
- Commercial dye

#### Directions:

- Purchase unbleached muslin at a fabric store. If possible, buy the end of a bolt so students can see what a bolt of cloth looks like.
- Have students tear the cloth into bandanna-sized squares to tie-dye.
- Show students how to tie up the cloth to create designs.
- The cloth may be knotted, rolled, twisted, folded, or bunched.
- Tie the cloth as tightly as possible so the dye will not soak inside.
- Purchase commercial dye and follow the instructions on the package.
- Dip the cloth into the dye and stir gently. The longer you leave the cloth in the dye, the darker the color.
- Take the cloth out of the dye and rinse it thoroughly in cold water.
- Untie the cloth and rinse again.
- Squeeze out the excess water and drain the cloth on newsprint that has been spread flat.

## Quick Cotton Facts:

- Display the creations, using clothes pins and clothes line stretched between two structures. If in the classroom, display along the hallway or in the classroom.

After the cotton fiber is separated, it is pressed into bales. Most bales of cotton produced in the United States are of a universal density. They are 55 inches tall, 26 inches wide, and 21 inches thick. These bales weigh between 485-500 pounds.

# Quick Cotton Facts:

One bale of cotton can be used to produce many of the items we wear or use each day. The chart below lists typical items produced from cotton, tells how many can be created from one bale, and the number of pounds of cotton required to manufacture an individual item.

<u>Manufactured Goods</u>	<u># Produced per Bale</u>	<u>Pounds per Item</u>
Adult Sweatshirt	500	1.0
Diapers	3,000	.16
Jeans	325	1.5
Ladies' Shirts	850	.58
Men's Shirts	540	1.0
Pillowcases	1,210	.4
Towels	1,230	.4

# Other Activity Suggestions:

## Cotton Cycle Model

### Materials:

- 2 White paper plates per student
- Patterns (attached)
- Construction paper (brown, green, pink)
- Green yarn (five 12" pieces)
- Scissors
- Stapler
- Hole punch
- Cotton balls

### Directions:

- Trace the patterns onto construction paper or have copies run on colored card stock. Cut out.
- Use the hole punch to make a hole on each X.
- Staple paper plates together (top sides facing) halfway around. Use the punch to make a hole in the top edge of one paper plate.
- Use yarn to fasten the pieces of the cotton cycle together in the correct order (*seed, leaf, square, blossom, boll*).
- Tie one piece of yarn through the hole in the paper plate, attaching the other end through the hole in the boll.
- Cut eight - 4"x1/2" strips of brown paper. Glue along the bottom edge of the paper plate. Trim to fit. Attach cotton with glue to one of the plates.
- OPTIONAL: Attach pictures of cotton products to the back of one plate.
- Use the Cotton Cycle Model to demonstrate the life cycle of a cotton plant.

# Cotton Products

## Kernel

- Fertilizer
- Fish bait
- Feed for livestock
- Cosmetics
- Margarine
- Soap
- Salad and cooking oil
- Waterproofing
- Insecticides
- Rubber
- Mayonnaise
- Shortening

## Hulls

- Livestock feed
- Synthetic rubber
- Mulch and soil conditioner

## Lint from seeds

- Plastics
- Paint
- Toothpaste
- Cushions
- Mops
- Cotton swabs
- Transparent tape
- Comforters
- Hair care products
- Plastic outdoor signs
- Currency
- Twine
- Fingernail polish
- Rugs
- Clothing
- X-ray film
- Filter papers
- Fine writing paper

## Cotton fiber

- Clothing
- Gloves
- Dishtowels
- Sheets
- Jackets
- Pot holders
- Socks
- Hats
- Napkins
- Blankets
- Rugs
- Towels





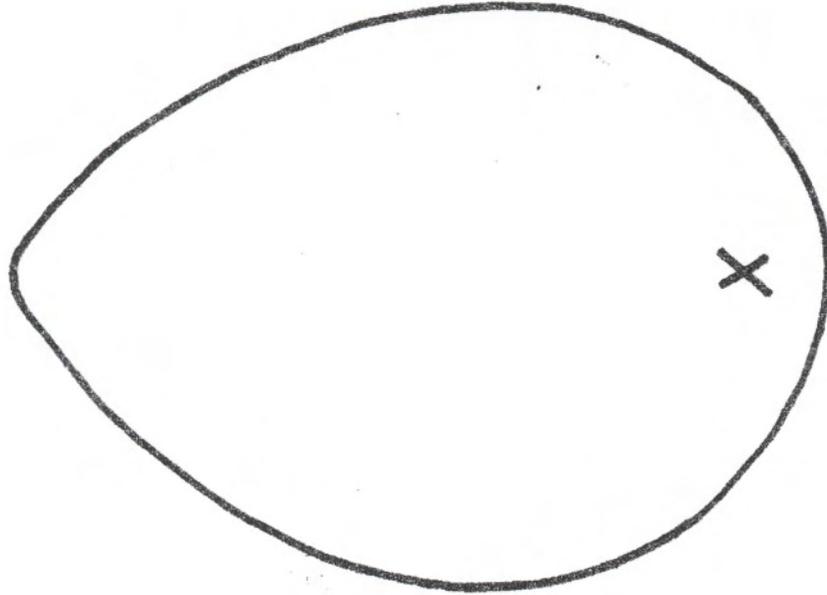
# Cotton Cycle Model

**Materials:** 2 white paper plates (per student), construction paper (green, white, brown, pink), scissors, hole punch, yarn (five - 12" pieces)

## Directions:

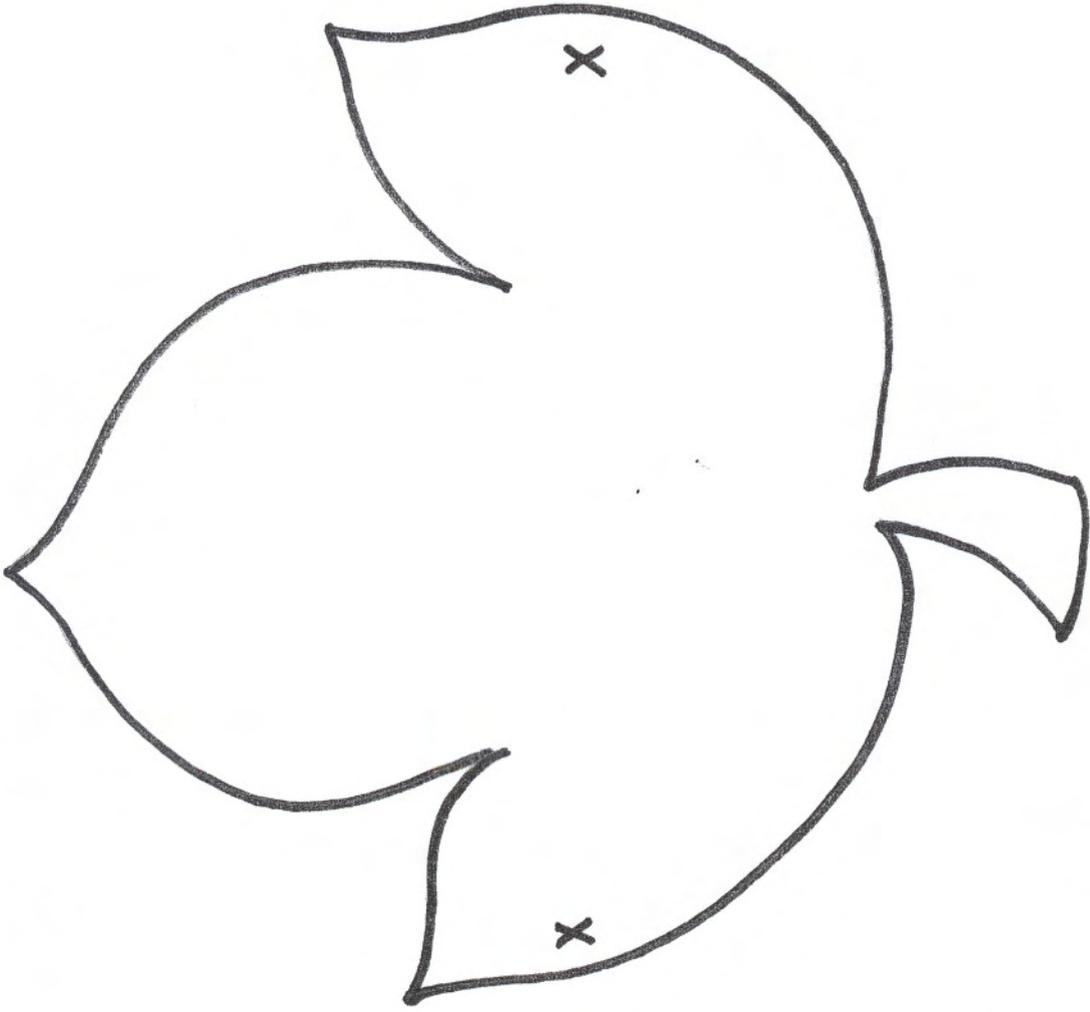
- 1.) Trace patterns onto construction paper or duplicate on colored card stock. Cut out.
- 2.) Use a punch to make a hole on each x.
- 3.) Staple paper plates together (top sides facing) halfway around. Use the punch to make a hole in the top edge of one paper plate.
- 4.) Use yarn to fasten the pieces of the cotton cycle together in the correct order (seed, leaf, square, blossom, boll).
- 5.) Tie one piece of yarn through the hole in the paper plate, attaching the other end through the hole in the boll.
- 7.) Cut eight - 4" x  $\frac{1}{2}$ " strips of brown paper. Glue along the bottom edge of the paper plate. Trim to fit. Attach cotton with glue to one of the plates.

**OPTIONAL:** Glue pictures of cotton products on one of the paper plates.



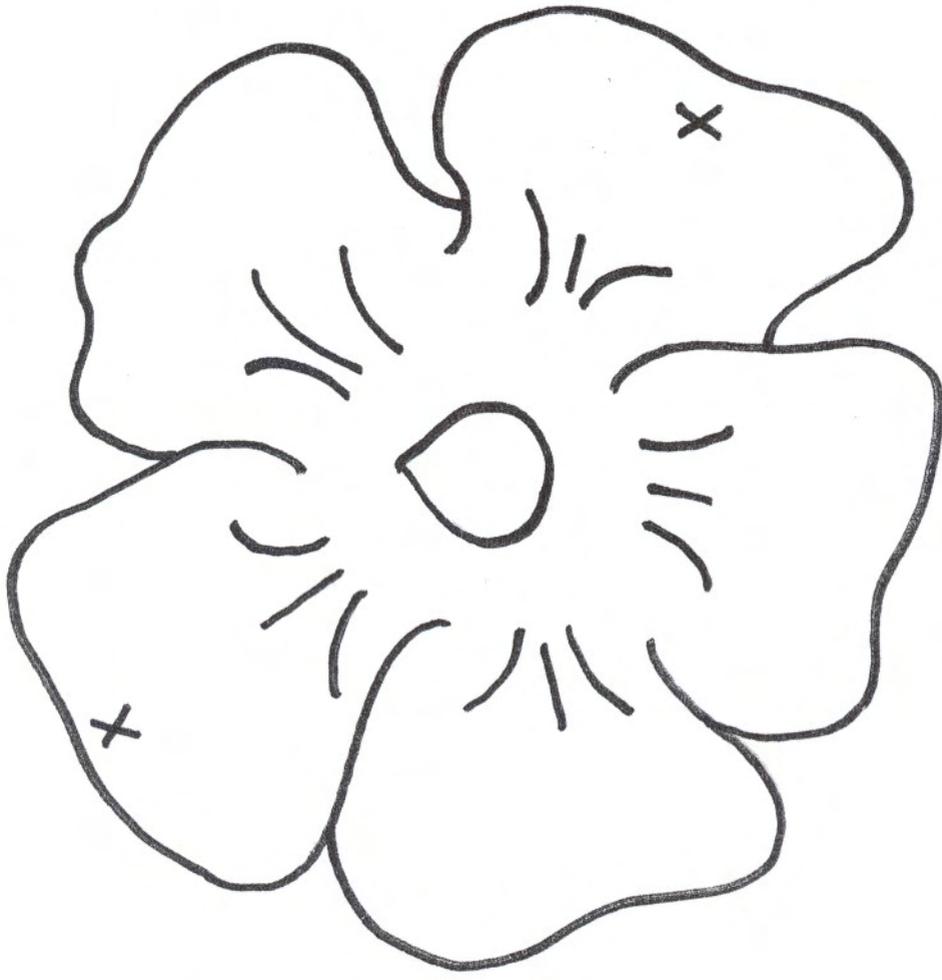
**seed - step #1**  
**brown**

**Cotton Cycle Patterns**



**leaf - step #2**

**green**



**flower - step #4**

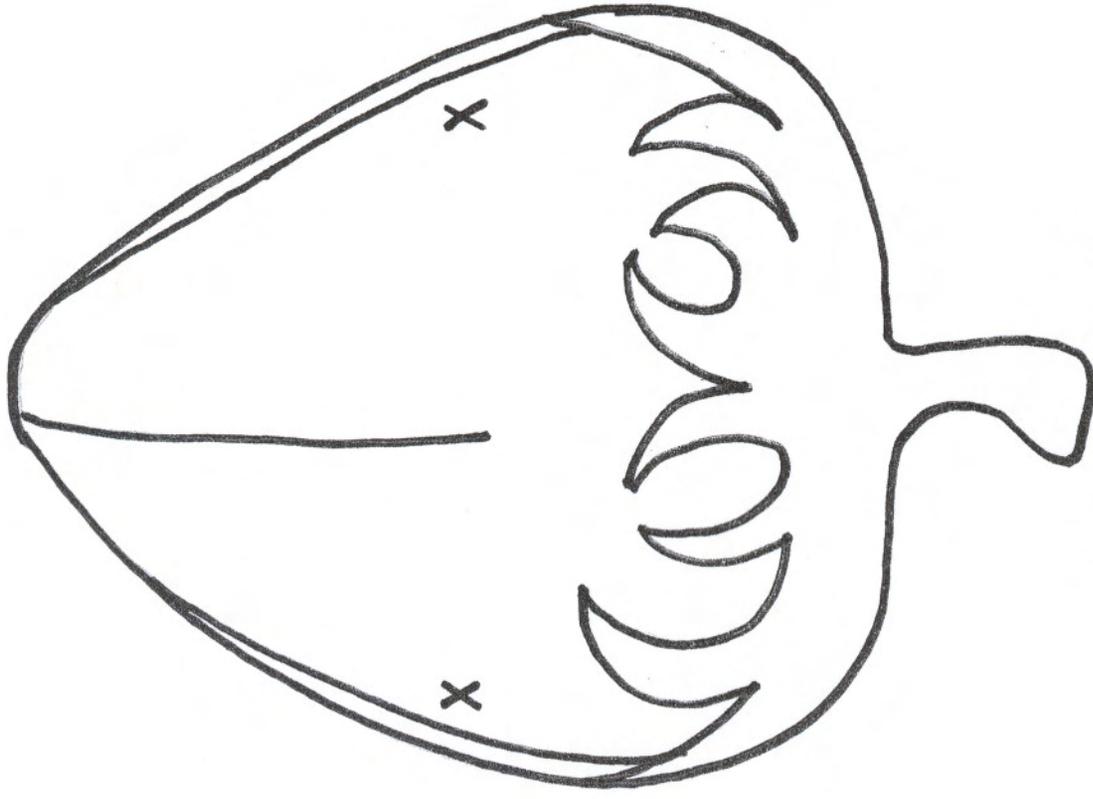
**creamy white**

Cotton Cycle Patterns



bud -step #3

green



boll - step #5

green