TEXAS FARM BUREAU®

Exploring the World of Cotton

Audience: 6-8 grade

Activity Length: One class period

TEKS:

- ELA:
  - 6th Grade §110.22.b
    - 1.A, 1.B, 1.D, 3, 4, 5.F, 5.G, 5.H. 6.B, 6.D
  - 7th Grade §110.23.b
    - 1.A, 1.B, 1.D, 3, 4, 5.F, 5.G, 5.H, 6.B, 6.D
  - 8th Grade §110.24.b
    - 1.A, 1.B, 1.D, 3, 4, 5.F, 5.G, 5.H, 6.B, 6.D
- Science:
  - 6th Grade §112.26.b
    - 1.A, 4.C, 5.F, 5.G, 11.B
  - 7th Grade §112.27.b
    - 1.A, 4.C, 5.F, 5.G, 11.A
  - 8th Grade §112.28.b
    - 1.A, 4.C, 12.A
- Social Studies:
  - 6th Grade §113.18.c
    - 6.A, 7.A, 8.A, 18.A, 18.c, 19.A, 19.B, 19.C
  - 7th Grade §113.10.c
    - 7.B, 11.A, 12.A, 19.C, 19.D, 20.A, 20. B, 20.C
  - 8th Grade §113.20.c
    - 27.A, 27.B, 27.C, 28.A, 29.A, 29.B, 29.C

Objectives:

- Students will understand the importance of cotton as an agricultural commodity.
- Students will explore the extensive uses of cotton as a product and byproduct.
- Students will identify methods in which cotton can be used to benefit the negative impacts humans may have on the environment.
- Students will expand their knowledge on current events relating to cotton production in Texas.
- Students will demonstrate the steps of cotton production and ginning and understand how the product starts as a raw material.

Materials Needed:

- Internet access (computer, cell phone, or iPad)
- Station instruction sheets
- Station materials
- Student answer sheets
- 10 products with ingredient or fabric labels (make sure you have some that do/not contain cotton)
- 2 devices with internet access

Preparation:

It is recommended to print and laminate all station instruction sheets and materials to extend the life of the resources. The student answer sheets may be printed two-sided and would also work if printed as a booklet. Collect at least 10 items to use for station 5. Make sure some items do not contain cotton (for food items it is better to bring the packaging and leave the food at home). If you are having trouble finding products, you can print images of products and their labels.

Introduction:

As students enter the classroom, have them retrieve a pencil and sit at a table without disrupting the station materials.

Once class begins share the information below:
Cotton has been around for longer than we know. According to historians and the pieces of cotton cloth found in caves in Mexico it must be at least 7,000 years old! Cotton is known for its many uses and extensive wear. Along with its widespread use, its history shows us that it has been produced by many civilizations all over the world from Pakistan to Egypt, to the Bahamas, and the Americas. Cotton is a global commodity. As these civilizations have developed and changed over the years, so has cotton. Cotton has become a versatile commodity; it clothes us, feeds us, is used in many personal hygiene products and so much more…

Inform the students that they will be exploring the world of cotton. As they go throughout the stations, expectations are high. Each rotation will last 6 minutes, and they need to practice staying on task. If they finish the activity with extra time available, there are "finished early" activities at the bottom of each station instruction sheet.

Remind students to write their answers down and notify them of time left throughout each rotation. Use resources like classroom screens to display a timer and important information.

Station Outline:

Station 1: What's Up with Cotton?
Students will select an article from the below link to read and respond to the discussion questions on their note sheets.

Station 2: The Life Cycle of Cotton
Students will use morse code to decipher hints that will aid them in understanding the steps in the cotton life cycle.

Station 3: Farmers Share
Students will complete puzzles that share details about the farmer's share of the food dollar.

Station 4: Ginning
Students will watch the Cotton: From Dirt to Shirt – Ginning video from Cotton Inc. As they watch the video, they will place the steps of ginning cards in order from start to finish.

Station 5: Products & By-Products
Students will learn about the many different products made of cotton by distinguishing whether an item is a product of cotton or not. Students will look at nutritional facts and labels to decide if the product has cotton in.

Stations 6: Cotton and the Environment?
Students will learn about the important role that cotton plays in our environment through the completion of a rebus activity.

Sources:
https://www.cotton.org/pubs/cottoncounts/story/index.cfm
https://www.cottongrower.com/cotton-production/the-history-of-cotton-in-texas-learning-from-the-past-cultivates-a-bright-future/
https://www.tshaonline.org/handbook/entries/cotton-culture
https://barnhardtcotton.net/blog/uses-of-cotton/
https://www.youtube.com/watch?v=zt2D8x1UtFo
https://www.snexplores.org/article/soaking-oil-spills-with-cotton
https://ymiclassroom.com/lesson-plans/dirttoshirt/

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Station 1: What's Up with Cotton?

Cotton is an important commodity in Texas, it is the number one crop grow in the state! In this station, you will learn about current events related to cotton production across Texas.

Instructions:

1. Go to https://texasfarmbureau.org/tag/cotton/
2. Select an article that has been published within the last year.
3. Read the article.
4. Answer the questions below using correct grammar.
5. Write your answers down on your answer sheet.

Finished Early?

Select at least one discussion question from the list below. Talk about the prompts with your group.

1. What would our day-to-day life be like without cotton?
2. Why do you think Texas is the top cotton producing state?
3. What is one interesting fact you found in the article you read?

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Station 2: The Life Cycle of Cotton

Although cotton is a drought-tolerant crop, which means while it does need water, it can survive and even thrive off much less than other crops. Along with water, cotton needs soil, nutrients, and sunlight to grow. Farmers must understand the growth phases of their crop to identify deficiencies and provide assistive pest and herbicide control. In this station, you will learn about the stages of growth for an average cotton plant.

Instructions:

1. Familiarize yourself with the Morse Code document.
2. Use the Morse Code key to decode the missing words. These missing words will help you discover the "secret" stages of growth.
3. Write your answers down on your answer sheet.

Finished Early?

Create a short poem or song that expresses challenges a cotton plant might experience in its lifecycle. Think weather, insect pests, and weeds.

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Station 3: Farmer's Share

Farmers work hard to make sure they produce a quality product. It takes time and many resources to produce this fluffy treasure. In this station, you will unscramble the facts behind the farmer's share.

Instructions:

1. Divide into three groups.
2. Each group will complete a puzzle.
3. When your puzzle is complete, write the unscrambled message on your answer sheet.
4. Take turns sharing your unscrambled fact with the other groups and write them down.

Finished Early?

Select at least one discussion question from the list below. Talk about the prompts with your group.

1. Why do you think farmers receive such a small amount of the food dollar?
2. What are a few reasons the cotton might be lower quality? What could cause a decrease?
3. Do you think this is fair? Why or why not?

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Station 4: Ginning

After cotton is harvested, the story isn't over! Cotton must go through multiple steps before it becomes the soft and smooth material we love. In this station, you will visit a cotton gin to learn about the many steps in processing.

Instructions:

1. Go to https://tinyurl.com/cottonginning
2. Watch and interact with the 360° video.
3. While watching, place the ginning step cards in order from start to finish.
4. Write your answers down on your answer sheet.

Finished Early?

Create an appropriate slogan that will help your local cotton gin sell their processed cotton! Write your slogan at the bottom of your answer sheet.

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Station 5: Products & By-Products

Cotton is all around us. We use it multiple times a day, and that's not because our clothes are made from it! In this station, you will determine whether an item contains cotton or not.

Instructions:

1. Take turns reviewing the nutrition label or tags on each item.
2. Look for words like cottonseed oil, cotton linter, cellulose fibers/gum, cottonseed meal, etc.
3. List each item in the chart on your answer sheet.
4. After looking at the tags and labels, write whether they contain cotton or not.

Finished Early?

Make a list of other items you think may contain cotton, see who can come up with the longest list!

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Station 6: Cotton & the Environment

Cotton plays a huge roll in our environment and is considered a sustainable material. In this station, you will discover the importance of cotton and how it impacts our environment.

Instructions:

1. Divide into three groups.
2. Each group will decode an important fact by associating a word with each image.
3. Take turns rotating facts until you have completed all three. Make sure you write your answers down on your answer sheet.

Finished Early?

Using cotton, design an invention that could take care of an issue or improve a current product. Draw or write about your invention in the empty space on your answer sheet.

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Station 1: What's Up with Cotton?

Follow the link below. Select an article that was published within the last year. After reading the article respond to the questions below.

1. What is the title of the article?

2. When was it published?

3. Who is the author?

4. In 1-3 detailed sentences, describe the purpose of the article and who the intended audience is.

5. What are some pros/cons that were covered in the article?

6. List a quantitative fact that you learned about in this article:

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Station 2: The Life Cycle of Cotton

Use the Morse Code Key to uncover the missing words. Then use your discovered words to solve the clues and discover the "secret" lifecycle of cotton!

Stage 1: Germination & emergence- seedlings _____ 5- _____ days after planting.

Stage 2: Seedling establishment- _____-9 days later the cotyledons unfold, and the first true _____ will develop.

Stage 3: Leaf _____ and canopy development- Nodes and internodes develop along with _____ types of branches- vegetating and fruiting.

Stage 4: Flowering and _____ development- Buds begin to develop 4-5 weeks after planting. After flowering the boll develops rapidly and reaches full size within 3 _____.

Stage 5: Maturation- Fibers continue to _____ longer and strengthen. Cotton is ready to _____ at 130-160 days.

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Station 3: Farmer's Share

In smaller groups take turns piecing together each puzzle to understand the food dollar and the portion of it that farmers receive. Once the puzzle is complete shuffle the pieces and trade until you have completed all puzzles.

Puzzle 1 Answer:

Puzzle 2 Answer:

Puzzle 3 Answer:

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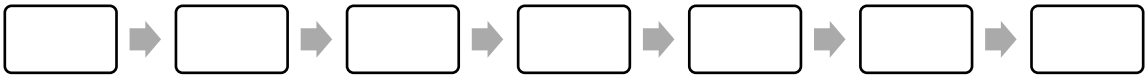
Station 4: Ginning

Watch the video "Cotton: From Dirt to Shirt – Ginning" to learn how cotton is processed into a usable fiber. Then, use the timeline cards to place each step of the ginning process in order from start to finish. Create a flow chart in the space provided below.



example flow chart

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Station 5: Products & By-Products

Labels are used to inform consumers about the important details of a product including ingredients, nutrition, warnings, instructions, and other information. Use the label on each product to determine whether the product contains cotton.

Item Name	Is it cotton?

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Station 6: Cotton and the Environment

How does cotton impact our environment? Each image associates with a word, us the pictures to fill in the blanks and learn about cotton's important impact on the environment.

Within the last 20 years _____ _____ have decreased their use of _____ by 50% while _____ more cotton on the same amount of _____.

Low _____ immature _____ _____ absorb and retain _____ and has a great potential to _____ in cleaning up oil _____.

Unlike many synthetic fibers, _____ _____ can be _____ and recreated into fibers used in products like _____ _____, rags, _____, and stuffing.

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Station 1: What's Up with Cotton?
KEY

Student's answers will vary according to the articles they selected.

Finished Early?

Select at least one discussion question from the list below. Talk about the prompts with your group.

1. What would our day-to-day life be like without cotton?
   Very different! It would impact the clothing we wear, household products, industries and how products are manufactured, imports and exports, and possibly our society.
2. Why do you think Texas is the top cotton producing state?
   Because of its fertile soil and advancements in agriculture technology.
3. What is one interesting fact you found in the article you read?

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Station 2: The Life Cycle of Cotton
KEY

Stage 1: Germination & emergence- seedlings **sprout** 5-**10** days after planting.

Stage 2: Seedling establishment- **4**-9 days later the cotyledons unfold, and the first true **leaf** will develop.

Stage 3: Leaf **area** and canopy development- Nodes and internodes develop along with **two** types of branches- vegetating and fruiting.

Stage 4: Flowering and **boll** development- Buds begin to develop 4-5 weeks after planting. After flowering the boll develops rapidly and reaches full size within 3 **weeks**.

Stage 5: Maturation- Fibers continue to **grow** longer and strengthen. Cotton is ready to **harvest** at 130-160 days.

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Station 3: Farmers Input
KEY

In smaller groups take turns piecing together each puzzle to understand the food dollar and what farmers receive. Once the puzzle is complete shuffle the pieces and trade until you have completed all puzzles.

Puzzle 1

The farm share is the portion of the food dollar that goes to farm establishments for the sale of raw food commodities.

Puzzle 2

The marketing share is the portion of the food dollar that goes to food supply chain establishments for post-farm activities that transform raw food into finished food products.

Puzzle 3

The farmer's pay is dependent on the grade of the cotton – each bale of cotton is graded in a USDA laboratory. The better the cotton grades, the more the farmer is paid.

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THE MARKETING SHARE IS THE PORTION OF THE FOOD DOLLAR THAT GOES TO FOOD SUPPLY CHAIN ESTABLISHMENTS FOR POST-FARM ACTIVITIES THAT TRANSFORM RAW FOOD INTO FINISHED FOOD PRODUCTS.

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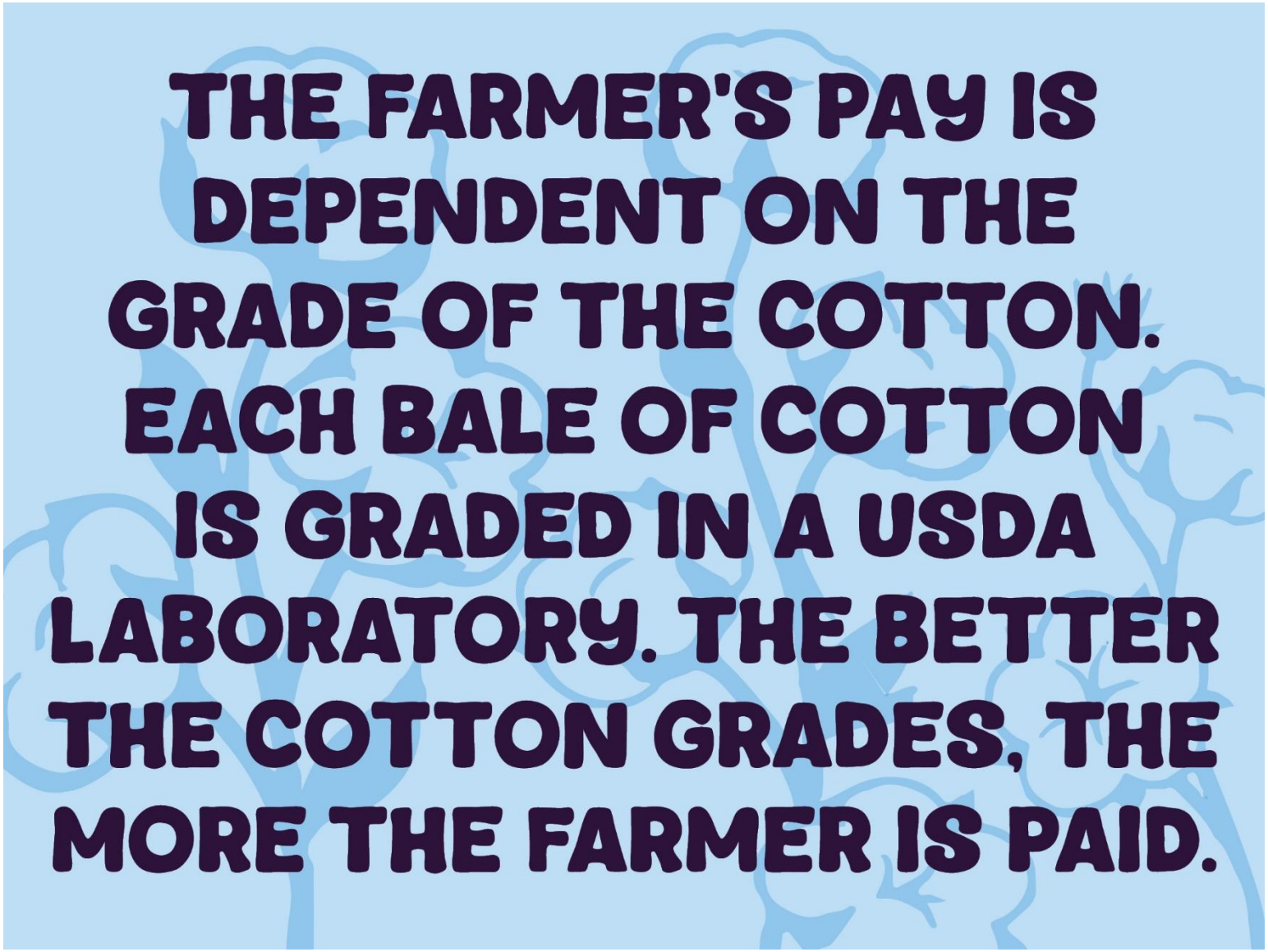

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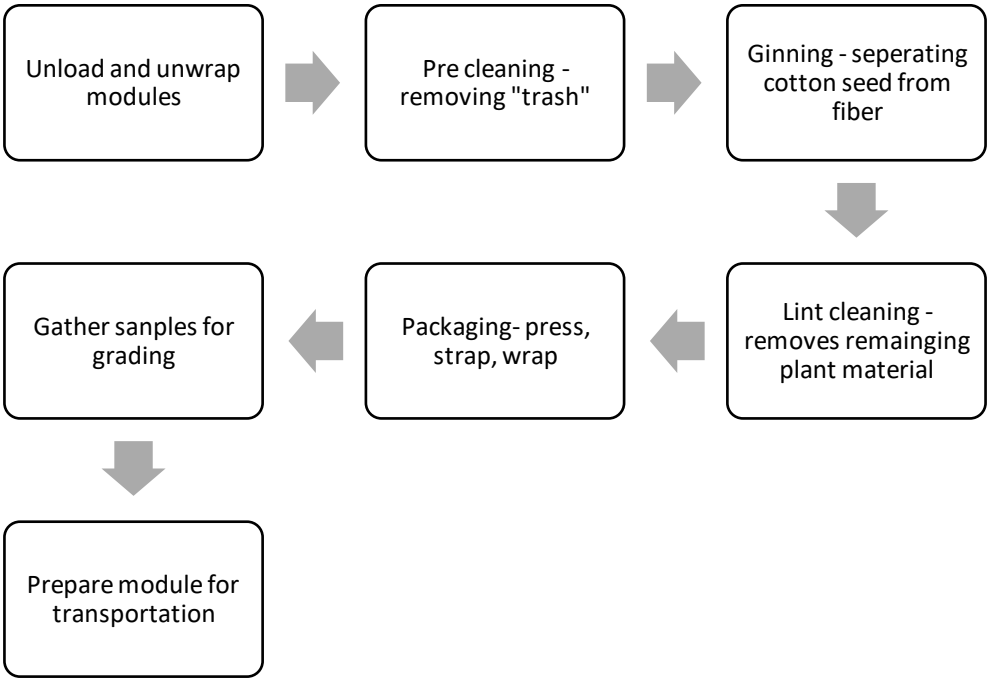
Station 4: Ginning
KEY

Watch the video "Cotton: From Dirt to Shirt – Ginning" to learn how cotton is processed into a usable fiber. Then, use the timeline cards to place each step of the ginning process in order from start to finish.



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Station 5: Products & By-Products

KEY

Labels are used to inform consumers about the important details of a product including ingredients, nutrition, warnings, instructions, and other information. Use the label on each product to determine whether the product contains cotton.

Item Name	Is it cotton?

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Station 6: Cotton and the Environment
KEY

How does cotton impact our environment? Each image associates with a word, us the pictures to fill in the blanks and learn about cottons important impact on the environment.

Within the last 20 years, **cotton farmers** have decreased their use of **water** by 50% while **growing** more cotton on the same amount of **land**.

Unlike many synthetic fibers, **cotton clothing** can be **recycled** and recreated into fibers used in products like **mop heads**, rags, **paper**, and stuffing.

Low **grade** immature **cotton can** absorb and retain **oil** and has a great potential to **aid** in cleaning up oil **spills**.

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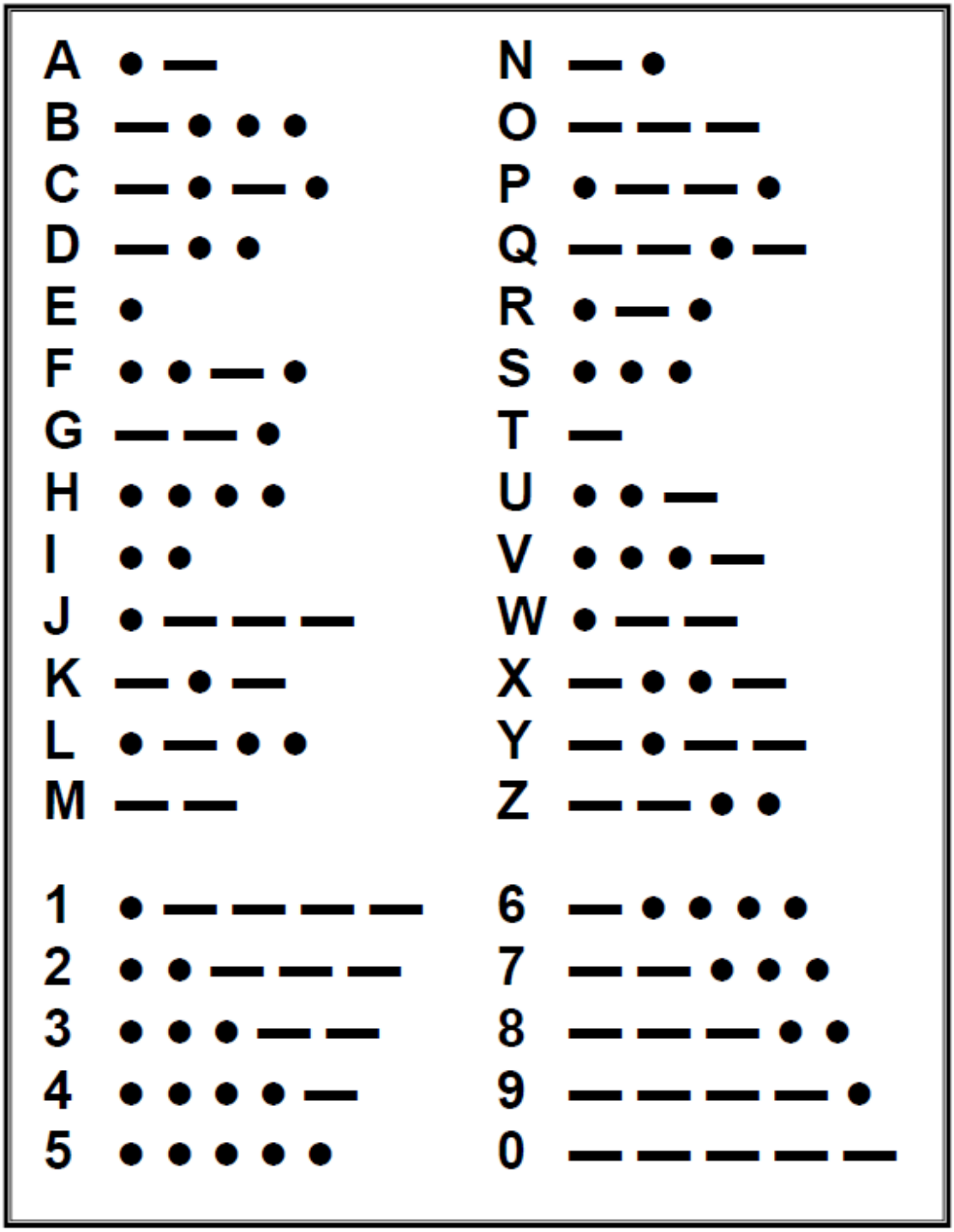
MORSE CODE
(ALPHABETICAL)



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Stage 1: Germination & emergence- seedlings _____ 5-_____ days after planting.

blank 1

blank 2

Station 2

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Stage 2: Seedling establishment- _____-9 days later the cotyledons unfold, and the first true _____ will develop.

blank 1

blank 2

Station 2

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Stage 3: Leaf _____ and canopy development- Nodes and internodes develop along with _____ types of branches- vegetating and fruiting.

blank 1

•– •–• • •–

blank 2

– •–– ———

Station 2

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Stage 4: Flowering and _____ development- Buds begin to develop 4-5 weeks after planting. After flowering the boll develops rapidly and reaches full size within 3 _____.

blank 1

blank 2

Station 2

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Stage 5: Maturation- Fibers continue to _____ longer and strengthen. Cotton is ready to _____ at 130-160 days.

blank 1

−−• •−• −−− •−−

blank 2

•••• •− •−• •••− • ••• −

Station 2

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Station 3

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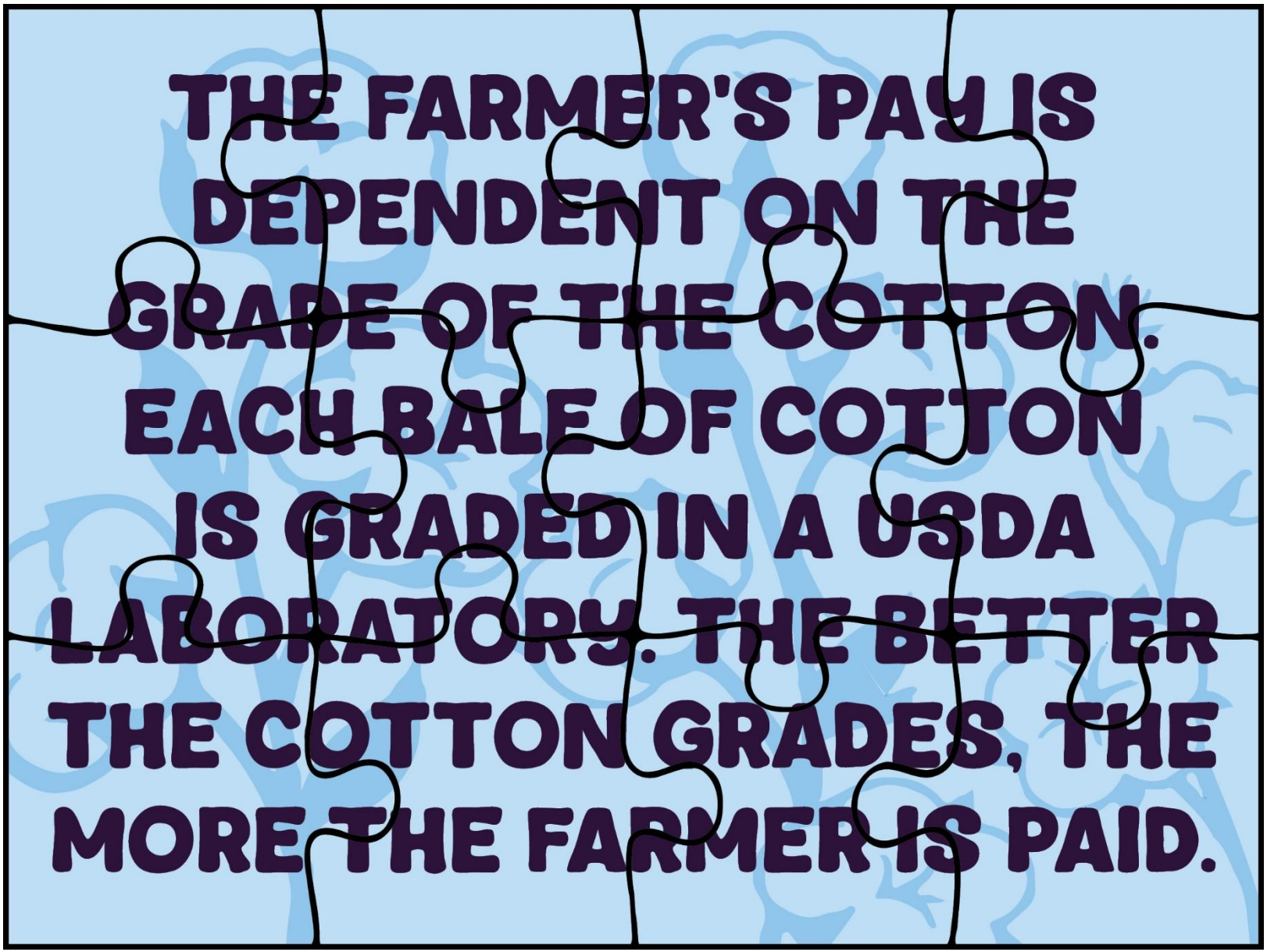

Station 3

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Unload & unwrap modules	Pre cleaning - removing “trash”	Ginning - seperating cotton seeds from fiber
Lint cleaning - removes remaing plant material	Packaging - press, strap, wrap	Gather samples for grading
Prepare module for transportation		

Station 4

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Within the last 20 years,

's have decreased their

use of by 50% while

more cotton on the same

amount of .

Station 6

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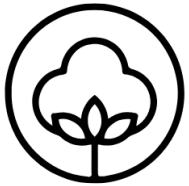
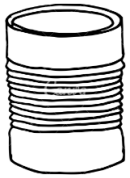
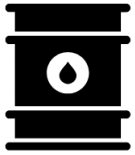
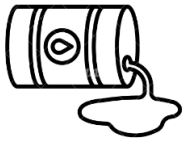
Low  immature

  absorb and

retain  and has a great

potential to  in

cleaning up oil  .

Station 6

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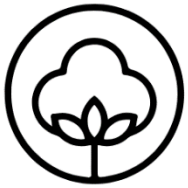
Unlike many synthetic fibers,   can be  -ed and recreated into fibers used in products like  ,  , rags,  , and stuffing.

Station 6