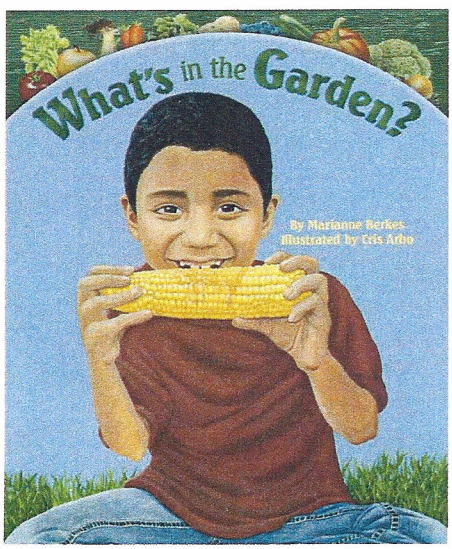
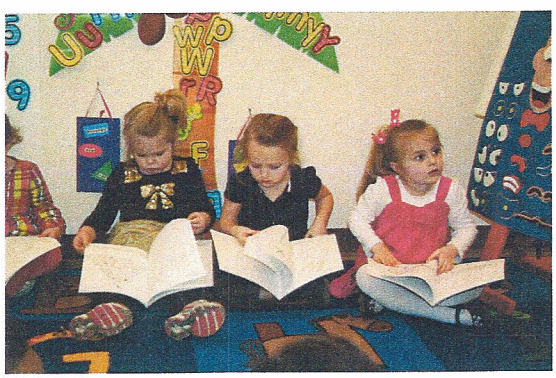
You're Invited...

To share agriculture's story during the 4th annual **Agriculture Literacy Week!**





The most rewarding aspects were the enthusiasm and questions from the students!

-2013 Volunteer Reader

Who:

Everyone with a passion for agriculture is invited to read this year's Book of the Year, What's in the Garden?, to PK-2 students.

When:

Agriculture Literacy Week will be celebrated March 23-29, 2014.

How:

Purchase books for $7 from AITC by February 28. Order form is enclosed and online at **www.agintheclass.org**

Enclosures:

Book Order Form, Reader's Guide and Tips Sheet, Student Handout, Optional Activity

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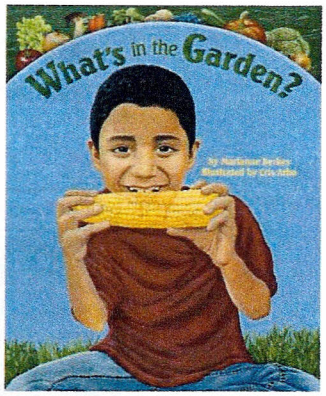
2014 Agriculture Literacy Week: Book Order Form



Name/County:_____

Contact Person: _____

Shipping Address: _____

Phone Number: _____ E-mail:_____

How many classrooms do you plan to read to? _____

How many children do you plan to read to? _____

How many volunteer readers plan to participate? _____

Orders must be accompanied by a check made payable to the
Virginia Foundation for Agriculture in the Classroom.

	Price per Unit	Total
Quantity: _____	$7.00	_____
Additional Resources (see back of sheet)		_____
Merchandise Total (books + additional resources)		_____
Tax	5.3% (merchandise total x .053=)	_____
Shipping **FREE to County Farm Bureau Offices** *$7 for mailing to all other addresses*	FREE to County Farm Bureau Offices	County:
Total Due (merchandise + tax+ shipping)		_____

Questions? Contact AITC at aitc@vafb.com or 804-290-1143

Please send orders to:
Agriculture in the Classroom
Attn: Agriculture Literacy Week
P.O. Box 27552
Richmond, VA 23261

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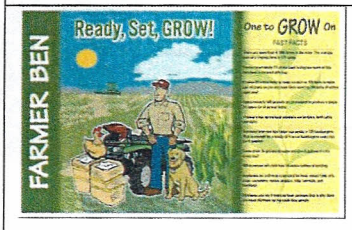
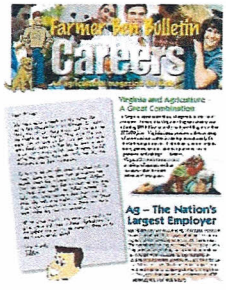
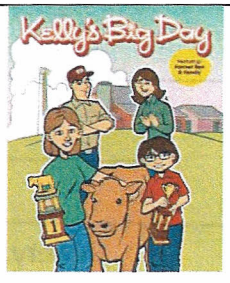
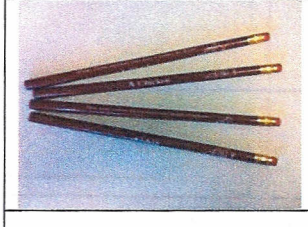
FARM BUREAU VIRGINIA

Additional Resources

Agriculture in the Classroom has **limited** quantities of the following resources available for purchase. Please fill out the order form below to indicate your selections and add the sub-total to the front of this sheet.

Resource	Price	Quantity	Total Price
	Farmer Ben Placemats $10.00 per/100 pack	_____	$_____
	Farmer Ben Career Bulletins $5.00 per/25 pack	_____	$_____
	Virginia Agriculture Map Puzzle $3.75 each	_____	$_____
	Kelly's Big Day book $7.00 each	_____	$_____
	Pencils $2.75 per/25 pack	_____	$_____
Additional Resources		Total	$_____

2014 Agriculture Literacy Week:
Volunteer Tips and Readers' Guide

Thank you again for participating in Virginia's Agriculture Literacy Week. We hope you will find the tips below helpful in preparing for your classroom visit.

Getting Started: The book is best suited for preschool through second grade students. Contact a local school and introduce yourself as well as the project. Be sure to schedule well in advance, as many teachers make their lesson plans several weeks ahead of time. Order your book(s) from AITC and gather any supplies you may need including copies. A template for book plates, which can be personalized for your organization, is available for download from the AITC website.

Preparation: Always be over-prepared! Practice reading the book both silently and aloud. Gather any garden or farm related "props" you might be able to bring. Excellent props for this book would be any of the garden crops mentioned as well as their by-products. For example: seeds of corn as well as corn products. A wonderful bonus to the reading would be to bring one of the recipes in the book for students to try. If you choose to do this, make sure to clear any food items with the teacher ***in advance*** as many schools have various rules concerning food and allergies.

Introduction: Introduce yourself to the students. Share your connection to agriculture. Tell them you will be reading a story that includes riddles about different fruits and vegetables. You will read the clues and they can try to guess the plant described.

Reading: Agriculture in the Classroom suggests reading the riddles and having students guess what the correct plant is. Highlight any information or illustrations on each page in accordance with your comfort level as well as the students' attention span and the time allotted. A Readers' Guide with sample talking points and prompts is included on the back of this sheet.

Post-Reading: Discuss the book with the class. What questions do they have? What is something new that they learned?

Optional Activities: Prior to class, print copies of the enclosed student handout. You may choose to do the handout with the students or to leave them behind for children to take home. You may also choose to do the "Garden Riddles" activity included in this packet.

Wrap-Up: Thank the students for being good listeners and the teacher for allowing you to visit his/her classroom. Leave the book as well as the information card about AITC so that the teacher may access supplemental resources. Visit AITC on the web at www.agintheclass.org for additional hands-on activities for volunteers.

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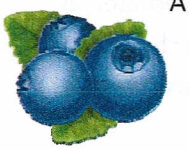
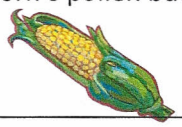
Be Prepared. Be Positive. Be Passionate!

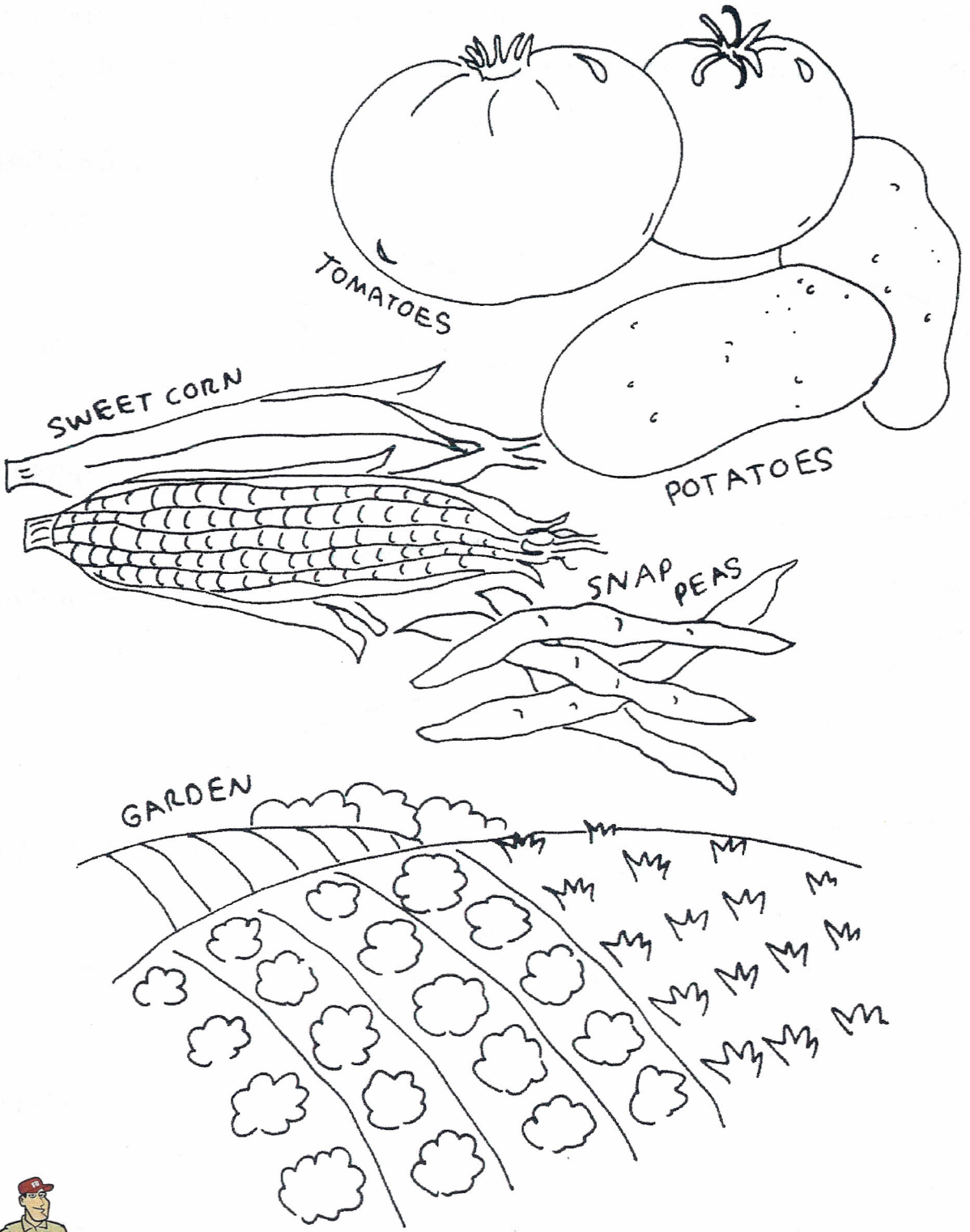
"What's in the Garden?" Readers' Guide and Discussion Prompts

Below are suggested classroom prompts and background information. Depending on your comfort level, amount of time allotted, and children's attention spans you may choose to use any or all of these suggestions to guide your reading and classroom discussion.

Apple Clue Page: What fruit do we pick in the fall that is red, green or yellow? It is growing on tree. 	**Lettuce Clue Page:** Hint words are "forms a head" and "leaf". Note - what do rabbits like to eat?
Carrot Clue Page: "Grows in the ground" and orange are key clues. Also, look at the caterpillar. Are they helpful or harmful? They like to eat parts of the plant, which can kill the plant.	**Broccoli Clue Page:** Look at the tiny flowers starting to form in the center of the plant. The ladybugs and butterflies are helpful insects.
Blueberry Pie Page:  A few blueberries are grown in Virginia, but you are much more likely to find strawberries on a Virginia farm.	**Celery Pages:** Looking at the stems of the plant you can see its stalks. This is the only highlighted crop not grown in Virginia; it needs a warmer climate. Virginia does produce dairy products and peanuts which both taste great on celery.
Tomato Pages: Point out the little green tomatoes on the vine. This picture also show lots of plant parts; stem, leaves, blossom, and the fruit of the plant. The ladybugs are helpful insects eating up all the aphids which destroy the plant. Is a tomato a fruit or a vegetable? It is both. A tomato, like many other vegetables, is the fruit of the plant containing the seeds. It is classified as a vegetable for cooking and eating purposes.	**Cucumber Clue Page:** The bee is pollinating this plant. It collects nectar from the flower but gets pollen on its legs. As it moves from flower to flower the pollen is transferred from plant to plant. The running vines will attach to wires and posts as the vine spreads. 
Onion Clue Page: The little girl is watering the plant. Plants need water to grow. Key words for this image are bulb, strong smell, and makes you cry.	**Potato Clue Page:** Mashed and fried are key words. These are tubers that grow underground. A tuber is an underground stem. The spider is a helpful creature which will eat the potato bug.
Corn Clue Page: Key words are ear, kernel, stalk and tassel. Corn is pollinated by the wind not bees. These bees are collecting pollen which appears early in the morning. The bees need the corn's pollen but the corn does not need the bees. 	**Pumpkin Clue Page:** The plant parts are illustrated well with stem, leaf and blossom. This image also shows the flower buds before opening as well as the flower fading with the little green pumpkin starting to form. The cricket is a harmful insect to point out. The yellow jacket is a helpful insect for pollination but beware of its sting.

The Appendix sections of the book, such as "Food for Thought," "How Does Your Garden Grow," and "Plant Parts" are full of useful information. It is not, however, necessary to read these sections aloud.

What's in the Garden?



Farmer Ben says—

Virginia farmers grow a variety of fruits and vegetables. The commonwealth ranks nationally in production of tomatoes, string beans, apples, potatoes, grapes, cucumbers, and sweet potatoes.

Create a Farm

Virginia farmers grow and raise many different types of crops and animals. Circle the words in the word bank that are things that belong on a farm. Cross through the words that do not. Then draw a picture of the circled words onto the blank farm below.

WORD BANK

BARN

COW

ZEBRA

CHICKEN

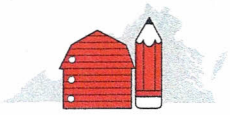
MALL

TRACTOR

TRAIN

FARMER

BEAR



Agriculture in the Classroom is a 501(c)3 non-profit organization that provides resources to schools through the generosity of our donors. We are proud to partner with the many volunteers that make Agriculture Literacy Week successful. To find out more about how you can support Agriculture in the Classroom visit ***www.AgInTheClass.org.***

Garden Riddles

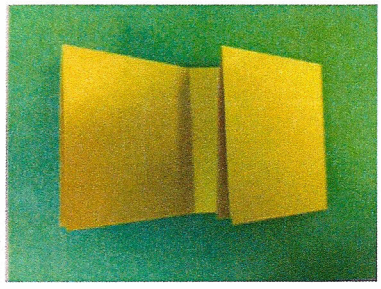
Grade Levels: 1st, 2nd

Learning Goal: The student will be able to describe various fruits and vegetables according to their unique characteristics.

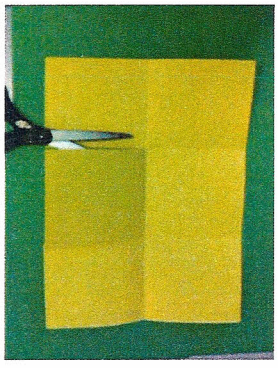
Materials: construction paper, scissors, markers/ crayons

Preparation: This activity pairs especially well with the book What's in the Garden? by Marianne Berkes as the book is told using a series of clues about different fruits and vegetables. These clues are excellent discussion points regarding the different characteristics of various plants.

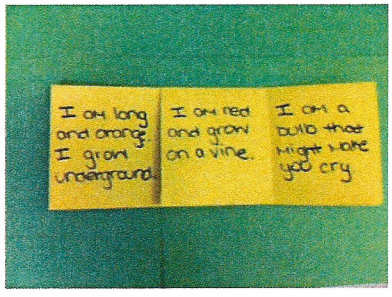
Directions:



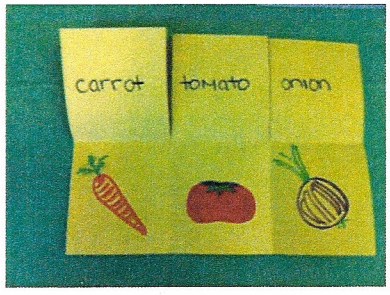
1. Give each student a piece of construction paper. Fold in half vertically (hotdog style).
2. With the fold seam on top, pull the left and right side over to make thirds.

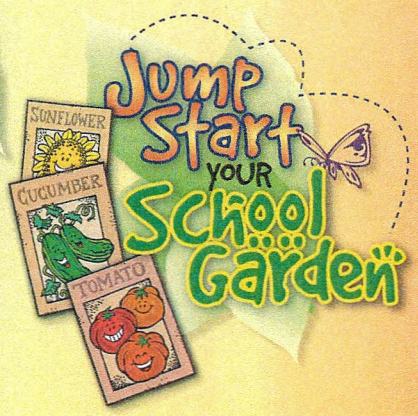


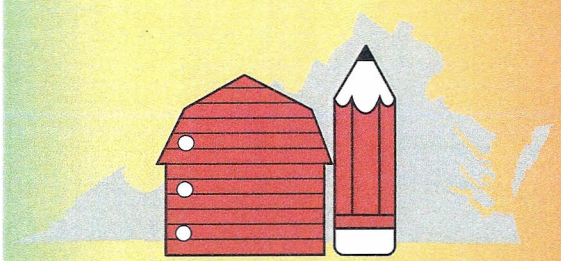
3. Open and place vertically, you will see 6 squares. Cut along the horizontal lines until you reach the vertical line (center fold).
4. Fold back in half along the center fold to create three flaps.
5. On the outside of the flaps, have students create three clues for three different fruits or vegetables – one plant and clue per flap.



6. Underneath each flap have them draw a picture and write the name of the answer.
7. Students can trade with each other and try to figure out each other's clues.







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Resource Round-up

Standards of Learning
Science: 3.10, 3.11, 4.9
Social Studies: 2.7

Objective
Students will:

- Identify plants and the crop produced
- Identify animal and the raw commodity produced
- Correlate plant and animal with the by-product

Materials

- Pictures of top crops and animals in Virginia (peanut, tomato, soybean, cotton, wood, dairy, chicken, sheep, corn, beef cattle, grape vines, apple trees, wheat field, vegetables)
- Large bag such as a grocery bag
- Peanut
- Tomato
- Soybean
- Cotton boll
- Tree bark
- Milk container
- Egg
- Wheat
- Grapes
- Cucumber
- Relish
- Jelly
- Grape
- Potato
- Wool
- Corn kernel
- Peanut butter
- Ketchup
- Crayon
- Fabric
- Rayon yarn
- Yogurt
- Mayonnaise
- Lanolin lotion
- Box mashed potatoes
- Corn cereal

Background Knowledge
Agricultural by-products are essential in the lives of modern Americans. However, many people overlook the link between by-products and their commodity of origin. This growing lack of knowledge leaves consumers unaware that much of what they use beyond food and fiber has an agricultural origin.

How well do you know your by-products? Link each raw commodity in the bag with its by-product. Try this fun activity.

Procedure

1. Display pictures of plants and animals raised in Virginia.
2. Provide a bag of products which we use from the plants and animals. Ask students to match each crop with the appropriate plant picture. Next students should match the animal with the

base product it is known for such as milk matches with the dairy cow. This is known as the raw commodity for both plants and animals.
3. Check for accuracy.
4. With the remaining items challenge students to use reasoning and deduction to correctly link the raw commodities and their by-products.
5. Discuss what new facts the class learned.

Extension

- Research other by-products from the plants and animals in the pictures
- Research a commodity grown in Virginia and develop a raw commodity and by-product chain.

Commodity Facts

Peanuts: Virginia grows a special variety of nut called Virginias. Virginias have the largest kernels and account for most of the peanuts roasted and processed in-the-shell. When shelled, the larger kernels are sold as snack peanuts. Virginias are grown mainly in southeastern Virginia and northeastern North Carolina. A peanut is actually an underground pea. One peanut plant can produce 40 peanuts. It takes about 540 peanuts to produce a 12 oz jar of peanut butter.

Tomato: Virginia ranks 3rd nationally in tomato production. This salad staple is grown predominantly on the eastern half of the state. Tomatoes are used as fresh produce and to make ketchup and sauces. Tomatoes can be grown in the field, in the greenhouse and hydroponically (without soil). Tomatoes can be set out after the last frost and will produce fruit in 65 to 75 days. Tomatoes come in many sizes, shapes and colors.

Soybean: Soybeans, used in the production of tofu, also make great crayons. Prang Fun Pro makes a crayon that is 85% soybean oil. It took a team of chemists and product developers two years to bring this unique crayon to consumers. One acre of soybeans can make 82,368 crayons. Candles are also created from soybean wax and oil.

Cotton: Cotton is planted in rows during the spring; about two months later, flowers develop from the buds. When the flowers die and fall off, they leave behind pods called bolls. After the bolls ripen and break open, the cotton fibers emerge. After the cotton is picked, it goes through a long process of cleaning and sewing before it can be used to make blue jeans.

Wood: More than 5,000 products are made from trees. One is rayon, a silk-like fabric that was the first manufactured fiber. It's made from cellulose acetate, which comes from wood pulp. The cellulose is dissolved by chemicals, forced through tiny holes in a metal spinneret, and then twisted into silky yarn.

Dairy: The most widely recognized dairy cow is the Holstein, which has black and white spots. The spots are similar to people's fingerprints in that no two cows have the same pattern of spots. Dairy farmers milk their cows at least twice a day. One cow produces 90 glasses of milk a day, and 200,000 in her lifetime. In fact, a cow's udder can hold 25-50 pounds of milk! Diary is Virginia's third largest agricultural commodity.

Chicken: There are several types of chickens grown in Virginia. Layers are grown to produce eggs. Broilers are raised to produce poultry products. It takes a chicken about 24 hours to produce one egg. It is very likely that the egg will be layed between 7 and 11 a.m. during the day. One chicken will lay approximately 250 eggs per year. Eggs are an essential source of protein and used in many foods from the egg on your sandwich to the mayonnaise in your salad dressing.

Sheep: Wool from sheep contains lanolin, which helps the wool repel water. During processing, the lanolin is removed from the wool for use as a moisturizer in many soaps, facial creams and lotions.

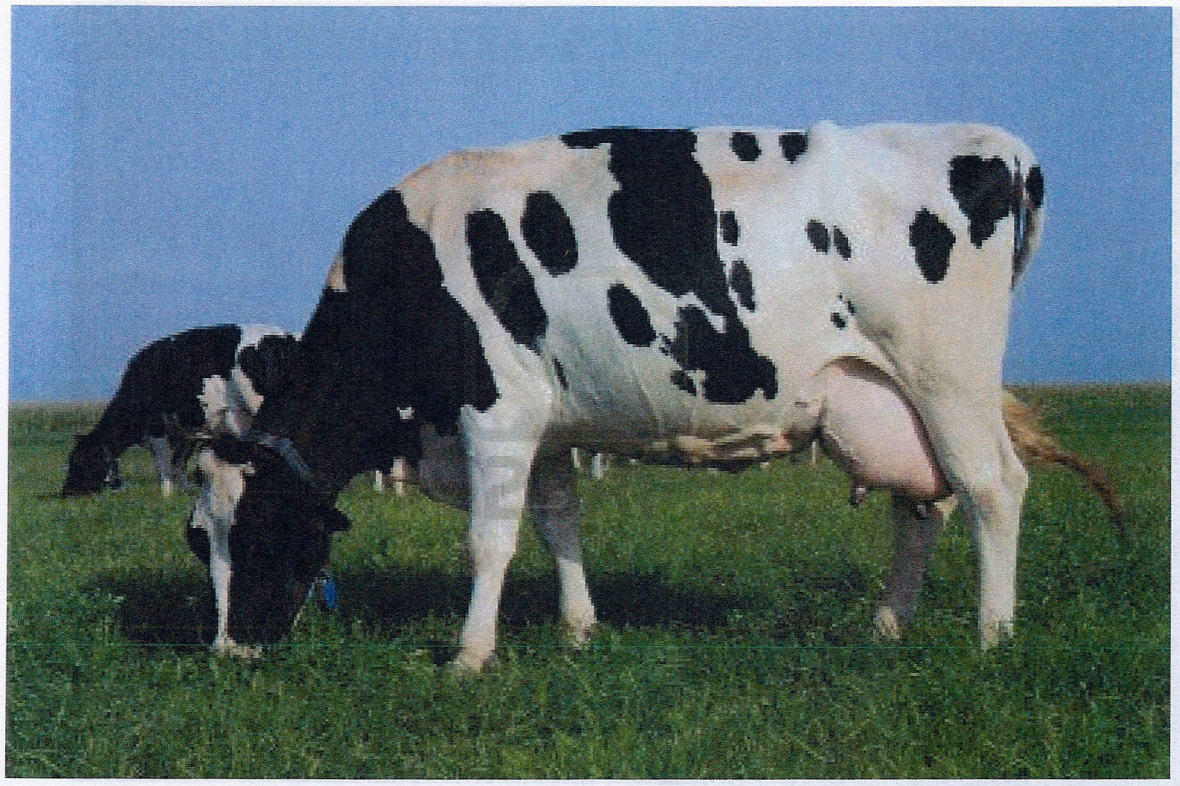
Corn: According to the National corn Growers Association, there is a use for every part of the cornstalk-husks, kernels, an even the water that kernels are processed in. Many "packing peanuts" are nearly 100% corn. They dissolve in water, making them environmentally friendly.

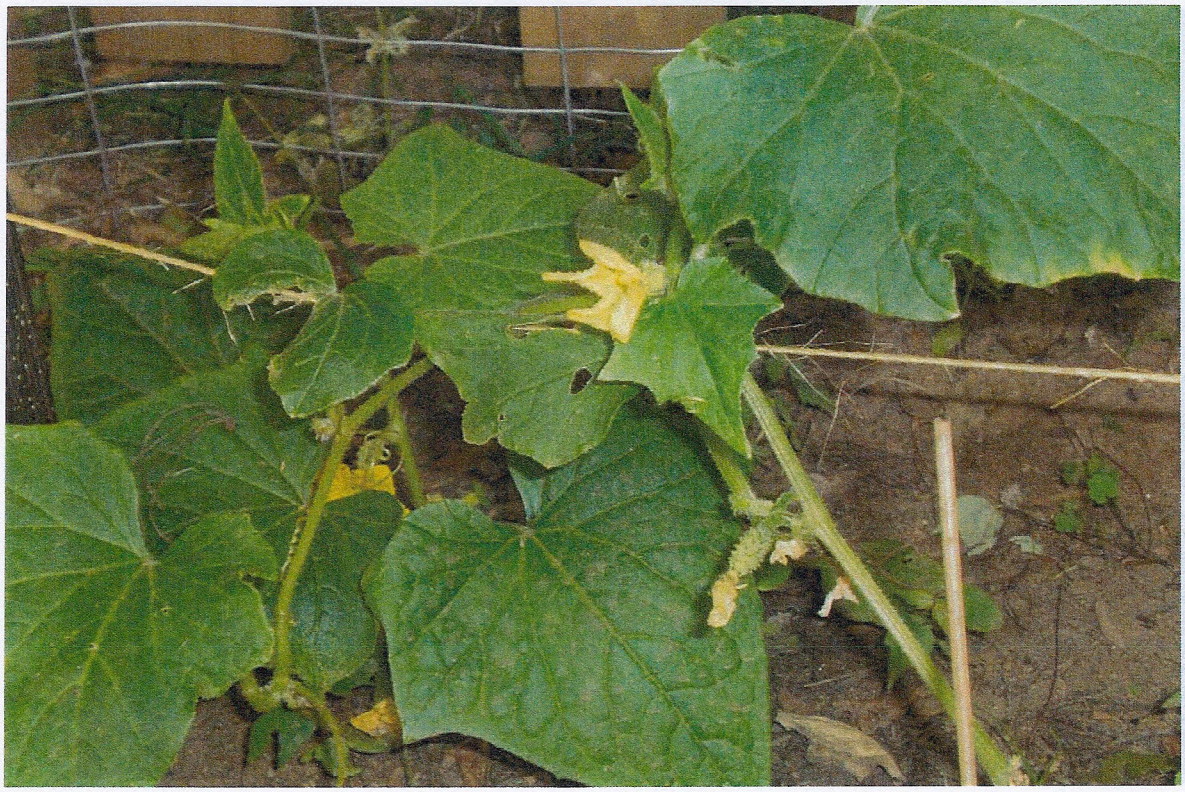
Beef cattle: Beef cattle are grown across Virginia. Beef products are used for a variety of purposes. People generally think of the beef we purchase from the butcher for dinner but consider all the other items we use from beef cattle. Food items such as Jello, marshmallows, gum, and even gummy bears are made from byproducts. Leather comes from cattle as well which are key in the manufacturing of footballs, basketballs and baseball gloves.

Grapes: Virginia's grape production has grown significantly over the past decade. The state ranks 7th nationally in grape production. Grapes are used in wine predominantly but may also be found in jams and jellies.

Apples: Virginia growers produce an average of 8 to 10 million bushels of apples per year. Apple varieties grown in Virginia include Red Delicious, Fuji, and Granny Smith. The majority of apples in Virginia are grown in the Shenandoah Valley area.

Wheat: Wheat is a versatile small grain grown by farmer. Wheat can be grown in the fall or spring and is used for animal food or sold for human use in breads and cereals.





Garden Discovery

Standards of Learning
Science: 2.1, 3.1, 4.1
Language Arts: 2.2, 3.4, 4.4
Math: 2.16, 3.14

Objective
Students will:

- Investigate an ecosystem
- Record and describe their findings

Materials

- Large plastic container
- Soil
- small shovels/trowels (you may also use plastic spoons)
- magnifying glasses
- plastic bowls
- ecosystem items
  - Ex: leaves, artificial worms/insects/animals, sticks, pebbles, pine needles
- Recording worksheet, attached (*you may choose to use one or both sides)*

Background Knowledge
The world is made up of a multitude of living things, and in this lesson, students will explore the natural world around them and become more aware of the many plants and animals that inhabit their environment. Schoolyards and gardens, in particular, are ripe for exploration and investigation. Sometimes, however, it is not feasible to take student outdoors to explore, so this lesson offers the option of bringing the outdoors inside. Teachers may choose to do either an outdoor nature walk or an indoor discovery tub.

Procedure
Option A: Nature Walk

1. Pass and go over the Garden Discovery recording sheet. Set ground rules for which areas may be explored while outside.
2. Take children outside to find items to fill in their worksheets.
3. Return to the classroom and have students work in partners to complete their worksheets and share their findings with the class.

Option B: Discovery Tub

1. Have your large plastic tub filled with soil and pre-loaded with various items for your ecosystem (see "Materials" for suggestions).
2. Have students take turns in small groups coming up to the discovery tub. Give them a chance to sift through it and see what is hidden.
3. Give each student (or pair) a plastic bowl to fill with items.
4. Have them take the items back to their seats to complete their recording sheets.

Extension
Use the descriptive words on side 1 of the worksheet to create a garden poem.

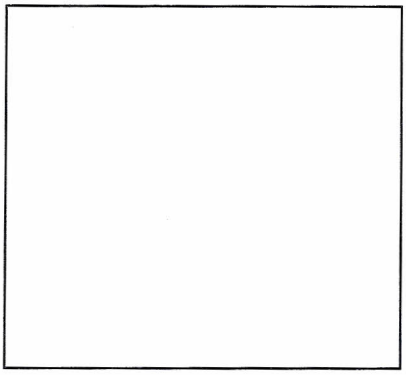
Garden Discovery

Write a synonym for your object *Optional: Find an object that is similar to your original.* _____slick_____	**Draw a picture of your item and write one word to describe it.** EXAMPLE:  _____smooth_____	**Write an antonym for your object.** *Optional: Find an object that has opposite characteristics.* ____rough____
_____	_____	_____
_____	_____	_____
_____	_____	_____

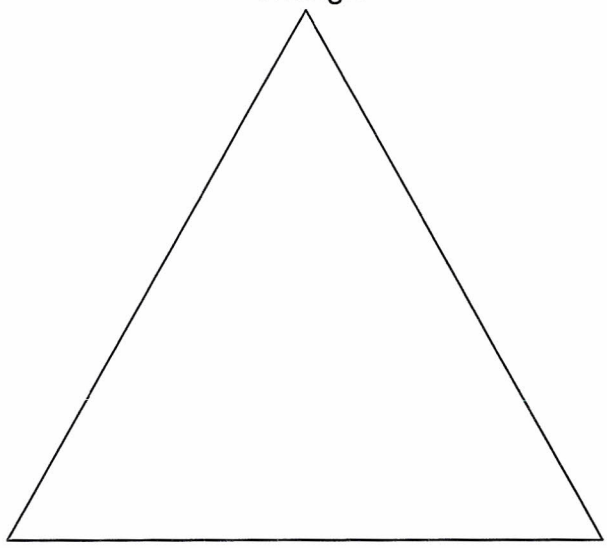
Shape Hunt

Directions: As you walk through the garden, find objects in nature that represent the following shapes and geometric figures. Draw a picture of your object within the shapes below.

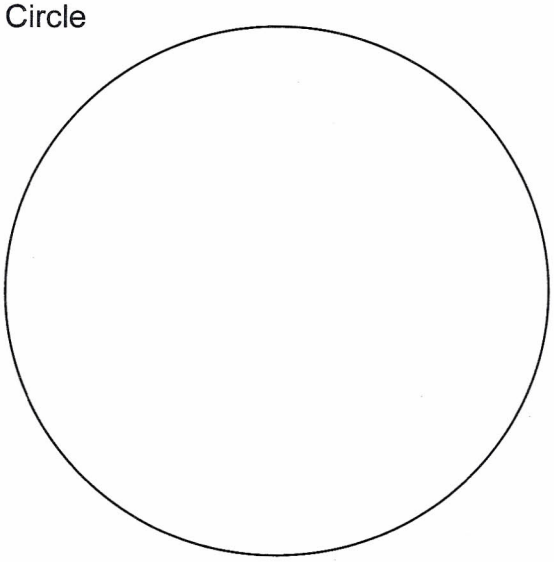
Square



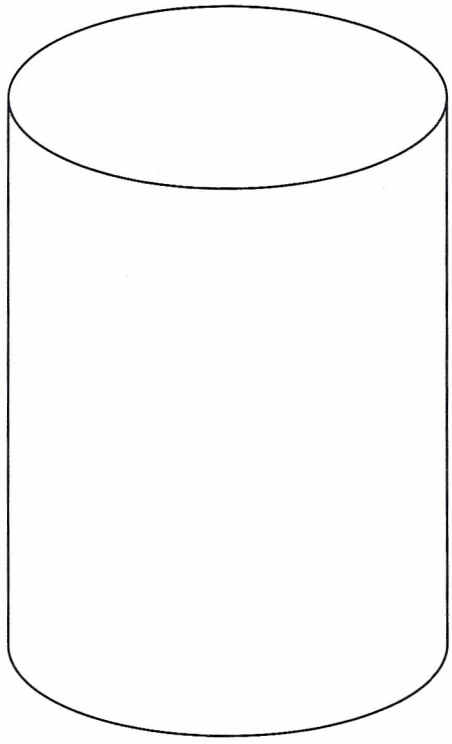
Triangle



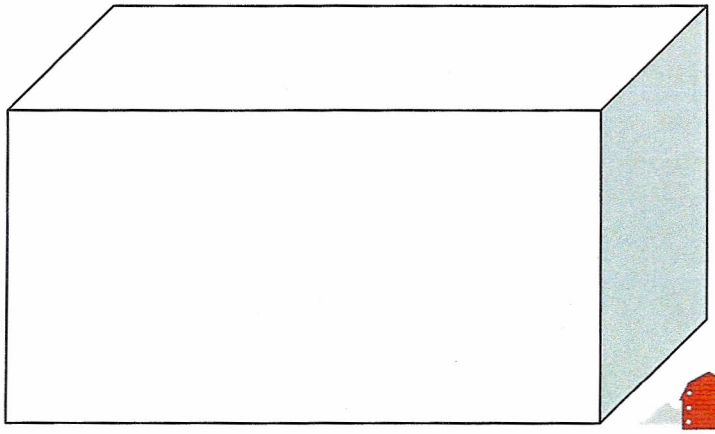
Circle



Cylinder



Rectangular Cube



Ag Tag Game

Standards of Learning
English K.1, 1.1, 2.1, 2.2, 2.3, 3.1, 4.1, 5.1

Objective
Students will:
- Expand listening, speaking, and written vocabulary
- Use descriptive words and adjectives
- Build prewriting skills to generate ideas

Materials
- Pictures relating to agriculture
- Nametags (hanging name badges)
- Large post-it notes

Background Knowledge
Agriculture is an important part of the world that we live in because it helps us to rely on a large part of the environment to survive. Advances in agricultural productivity have led to abundant and affordable food and fiber throughout most of the developed world. In this activity, students wear "Ag Tags" on their back with pictures of agricultural products. Other students write adjectives describing the pictures, and students must guess the identity of their "mystery product." This activity is a wonderful opportunity for students to expand their use of adjectives while learning more about Virginia agriculture.

Procedure
1. Construct nametags prior to doing the activity with students.
   - Insert an agriculture related picture into each hanging name badge
   - Cover the picture with a large post-it note.
2. Hand out the nametags and instruct the participants not to look at their picture.
3. Tell the participants to place the nametag around their neck so the picture is on their back.
4. Ask the participants to walk around the room and ask three other individuals to look at their picture and write (or say) a descriptive phrase or word on the post-it that gives a clue as to what is pictured.
5. After they have three phrases or words on their post-it, tell the participants to take off and read the post-it and try to guess their picture.
6. After guessing, tell the participants to look at their nametag to see if they guessed correctly.
7. Discuss how the pictures relate to agriculture and why agriculture is important to us.

Suggested Pictures
- Wildlife (snakes, groundhogs, squirrels, birds, etc.)
- Farm animals (cows, chickens, pigs, horses, etc.)
- Crops (corn, peanuts, pumpkins, apples, soybeans, tobacco, etc.)
- Forestry (soil, trees, etc.)
- Farming/gardening equipment (tractors, shovels, calculators, etc.)
- Products (milk, eggs, cheese, etc.)

Extension
- This game can be adapted to fit any unit of study. Simply change out the pictures to match the topic being studied.
- Have students take the adjectives / adverbs given to them during the game and write a descriptive paragraph about the item in the picture, incorporating the adjectives / adverbs on their tag.

AITC's Barnyard Bookshelf

AITC's Barnyard Bookshelf

Down on the Farm: Bees by Sally Morgan

From Tomato to Ketchup by Roberta Basel

Grow Your Own Sandwich by John Malam

How Did That Get in My Lunchbox? by Chris Butterworth

One Watermelon Seed by Celia Barker Lottridge

Pick, Pull, Snap by Lola Schaefer

These Bees Count by Alison Formento

Weed, Water, and Wait by Edith Hope Fine and Angela Demos Halpin

What's in the Garden? by Marianne Berkes

To find more great books visit AITC on the web at

AgInTheClass.org

Agriculture is Everywhere

Standards of Learning
Language Arts: 1.13, 2.12, 3.9, 4.7
Science: 2.8, 4.9

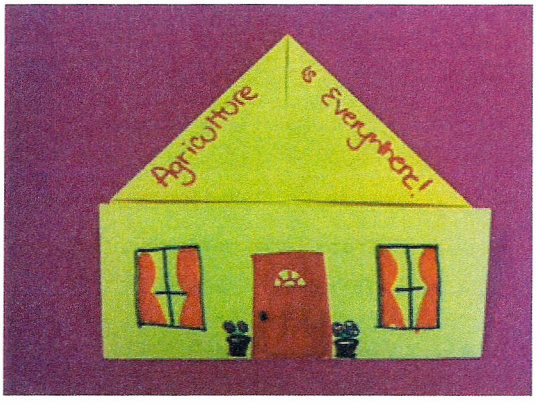
Objective
Students will:
- Identify the use of natural resources in their homes and daily lives

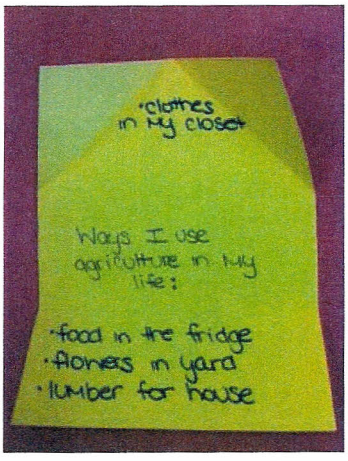
Materials
- Rectangular construction paper
- Markers, crayons

Background Knowledge
Many students do not realize that even though they may not live on a farm they are impacted by agriculture daily. More than just the food that they eat, agriculture also provides for the clothes that they where and the house they live in. Moreover, it is important for students to realize that the true origin of products is not at the factory or at the store; rather, it began as a resource or product from the natural world.

Procedure
1. Give each student a piece of construction paper. Place it on their desk vertically. Take the top two corners and fold inward to create a triangle with a point on top.
2. Next, take the bottom of the paper and fold up to meet the bottom of the triangle.
3. The resulting shape will look like a house. Have students decorate the outside of the house.
4. On the inside of the house, have students brainstorm all of the ways that they use agriculture in their daily lives and in their homes.
    a. Sample responses: clothes in the closet, food in the fridge, flowers in the yard, lumber for the house

Extension
Identify the human and capital resources used to process the natural resource into its finished product.





Garden Riddles

Standards of Learning
Science: 1.4, 4.4
Language Arts: 1.13, 2.12, 3.9, 4.7

Objective
Students will:

- Describe various vegetables according to their unique characteristics

Materials

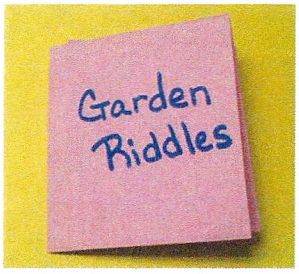
- Rectangular construction paper
- Scissors
- Markers/crayons
- Optional: What's in the Garden? by Marianne Berkes

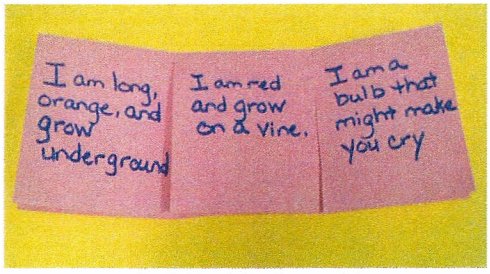
Background Knowledge
Plants can be classified in a variety of ways, such as by the edible plant part or by whether it grows above or below ground. Many different vegetables are grown in Virginia; the top crops include tomatoes, potatoes, sweet potatoes, snap beans, corn, cabbage, and cucumbers. In particular, you will find many vegetable farms in the Coastal Plains region of the state, which includes the Eastern Shore.

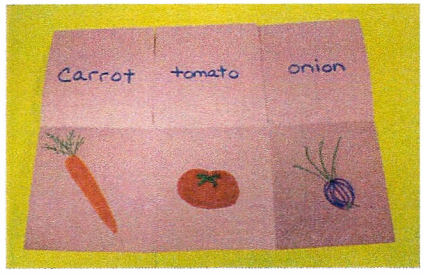
Procedure

1. This lesson pairs especially well with the book What's in the Garden? by Marianne Berkes as the book is told using a series of clues about different fruits and vegetables. You may choose to begin the lesson by reading this book and discussing the characteristics of the plants mentioned.
2. Give each student a piece of construction paper. Fold in half vertically (hotdog style).
3. With the fold seam on top, pull the left and right side over to make thirds.
4. Open and place vertically, you will see 6 squares. Cut along the horizontal lines until you reach the vertical line (center fold).
5. Fold back in half along the center fold to create three flaps.
6. On the outside of the flaps, have students create three clues for three different vegetables – one vegetable and clue per flap.
7. Underneath each flap have them draw a picture and write the name of the answer.
8. Students can trade with each other and have them try to figure out each other's clues.

Extension
Cut the clue and picture segments apart and then sort on the board. You can sort by plant part, color, or tops and bottoms.







Plant Parts Foldable

Standards of Learning
Science: 1.4, 4.4

Objective
Students will:
- Label the parts of a plant

Materials
- Rectangular construction paper
- Scissors
- Markers/crayons

Background Knowledge
Plants can be classified in a variety of ways, such as by the edible plant part or by whether it grows above or below ground. Many different vegetables are grown in Virginia; the top crops include tomatoes, potatoes, sweet potatoes, snap beans, corn, cabbage, and cucumbers. In particular, you will find many vegetable farms in the Coastal Plains region of the state, which includes the Eastern Shore.

There are parts of vegetables and fruits that we eat but we do not eat the same part of every vegetable. We can eat the roots, stems, leaves, and seeds of different types of vegetables. For example, when we eat a carrot we are eating the root. When we eat celery we are eating the stem. Eating peas or wheat means we are eating the seeds. Lettuce is the leaf part of the plant that we eat.

Procedure
1. Give each student a piece of construction paper. Fold in half vertically (hotdog style).
2. With the fold seam on top, pull the left and right side over to make thirds.
3. Open and place vertically, you will see 6 squares. Cut along the horizontal lines until you reach the vertical line (center fold).
4. Fold back in half along the center fold to create three flaps.
5. Place it on the desk vertically. Choose a plant to draw, and draw on the flaps, making sure that the bottom flap contains the roots, the middle contains the stem or vine, and the top contains the flower or fruit.
6. On the inside of the flaps, write the correct plant part.

A Bee's Life

Standards of Learning
Science: 2.4, 3.8, 4.4

Objective
The student will be able to:

- correctly order the steps in a bee's life
- demonstrate understanding of new vocabulary
- understand the importance of bees in plant pollination

Materials

- yellow construction paper
- life cycle cards, attached
- scissors
- glue sticks
- black markers
- Down on the Farm: Bees by Sally Morgan (*you may substitute another book on bees)*

Background Knowledge
A bee's life cycle has several distinct stages. Three days after the queen lays her eggs in the hive, the egg hatches into a larva. The larva is fed "bee bread," a mixture of honey and pollen. Next, the larva spins a cocoon in the hive. Within the cocoon the larva turns into a pupa, this takes four days. Lastly, the bee grows into an adult and leaves the comb.

Pollination is the transfer of pollen from the male flower part to the female flower part. The male part is called the anther and contains the pollen grains. The female part is called the pistil and contains the stigma, which is sticky to collect the pollen grains. Pollination must occur in order for flowering plants to reproduce. Pollen grains can be transferred by wind, water, bees, butterflies, other insects, birds, and bats. Bees are attracted to fragrant flowers and the nectar and pollen in these flowers. The bee stops at a flower to suck the nectar and the pollen grains get stuck to the bee's body. Then, when the bee moves to another flower, the pollen grains are transferred from the first flower to the second. The second flower is then pollinated.

Insects are needed to pollinate a variety of fruits, vegetables, and legumes. Common products include tomatoes, onions, blueberries, cherries, pears, sunflowers, pumpkins, broccoli, carrots, squash, cucumbers, lettuce, potatoes, oranges, lemons, limes, mustard seed, vanilla, sugar, almonds, watermelon, and apples. In fact, about one-third of the human diet is derived directly or indirectly from insect-pollinated plants. About 80% of theses are pollinated by bees. Within Virginia about 80 of Virginia's most popular crops, valued at about $80 million, rely on pollinators.

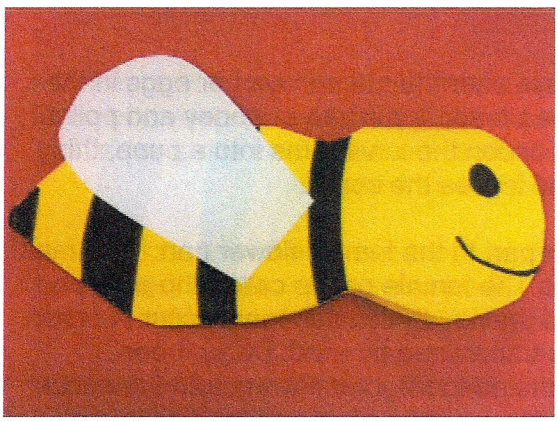
Procedure

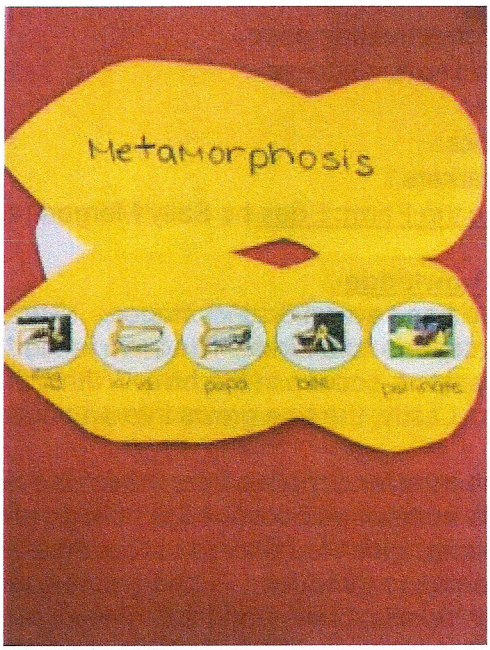
1. Begin by asking students what bees have to do with food? Point out that bees play an important role in the pollination of many fruits and vegetables that they like to eat.
2. Next, read aloud Down on the Farm: Bees. Note how the bee changes at different points in its life cycle. This is called a "metamorphosis."
3. Give each student a piece of yellow construction paper. Fold it in half vertically (hotdog style) and cut out the shape of a bee.

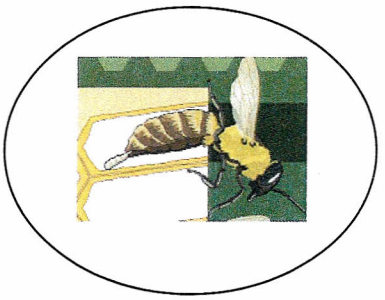
4. Pass out life cycle steps, have students cut them out and sequence them in the correct order and glue to the inside of the bee.
5. Write the following vocabulary words on the board: "egg, larva, pupa, bee, pollinate." Have them write the correct vocabulary word underneath each stage.
6. Above the circles, have them write the word "metamorphosis."
7. Use the left-over white paper to cut out a wing to glue on the bee.

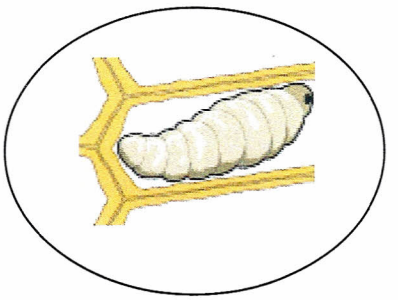
Extension

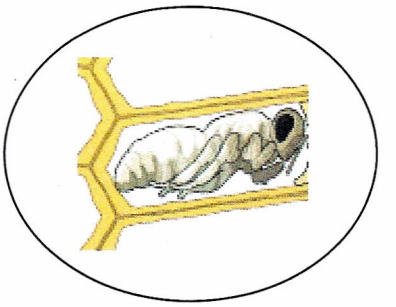
Create a bee buffet! Have students design picnic collages with pictures of foods that are pollinated by bees.

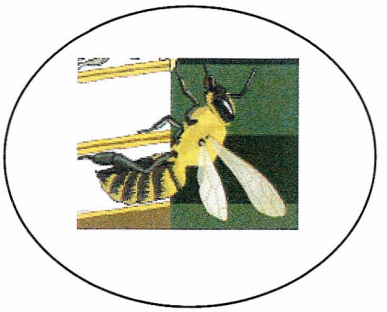


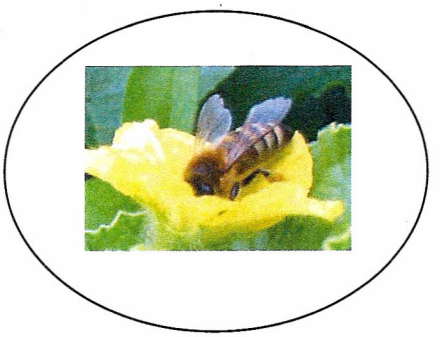












Use this space to draw and cut out your bee's wing.

Flowering Factorization

Standards of Learning
Math: 5.3
Science: 5.5

Objective
Students will:

- Identify and describe the characteristics of prime and composite numbers

Materials

- Construction paper of every color
- White squares
- Brown yarn cut into 2 inch lengths or craft sticks
- Markers
- Scissors
- Tape or glue
- Worksheet (see attached)

Background Knowledge
Plants use roots to obtain essential nutrients from soil. Without the thin stringy fibers, flowers and plants would not survive. Farmers rely on healthy soil and strong roots to keep their crops alive until they are ready to harvest. Roots begin forming during germination and continue to grow while the plant grows.

This activity can teach students the parts of the plant and the importance of roots while learning prime factorization. Factors of a multiple can be broken down until only prime numbers. Students get a visual representation of how a number can be broken down into factor families, and eventually only prime factors, using roots shooting from the stem of a flower.

Procedure

1. Discuss with students how to complete prime factorization. Explain that prime numbers can be multiplied together to make composite numbers. Prime factorization breaks down a composite number until you reach the prime factors that make it composite (18 = 2 X 3 X 3).
2. Use the attached worksheet to review prime factorization with your students. Make sure they understand that once a factor cannot be divided into two factors, except 1 and itself, it is a *prime* number.
3. Remind the students to circle the prime numbers in the factorization trees so they can determine the prime factorization for the composite numbers they are practicing with.
4. After everyone has demonstrated a clear understanding of prime factorization, and their "trees" have been approved, ask them to choose one composite number to use for their Flowering Factorization activity.
5. Provide all of the supplies listed above.
6. Ask the students to cut out the center of a flower and write their composite number on it. Give them time to make their flower petals, stem, and leaves.
7. Once everyone has made their flowers, have the students write on white squares of construction paper the factorization of their composite number. Make sure the students include all of the steps, and not just the prime numbers. They need to demonstrate how they

reached the prime numbers.

8. Ask the students to attach the factors appropriately, matching the practice they completed on the scratch paper.
9. On the prime numbers, draw a worm, bee, ant, or other garden critter to indicate the final factors of the prime factorization.
10. Hang up the flowers around the room.

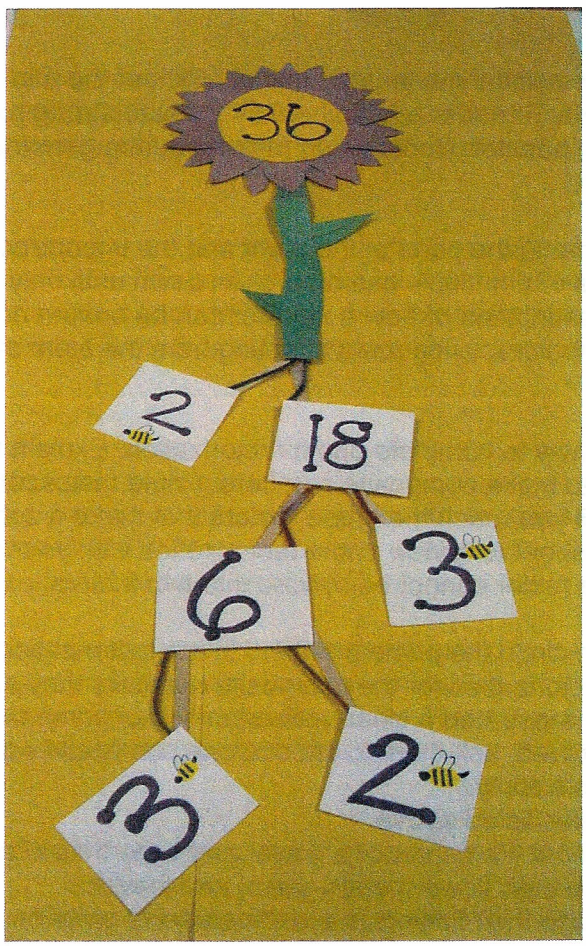
Extension

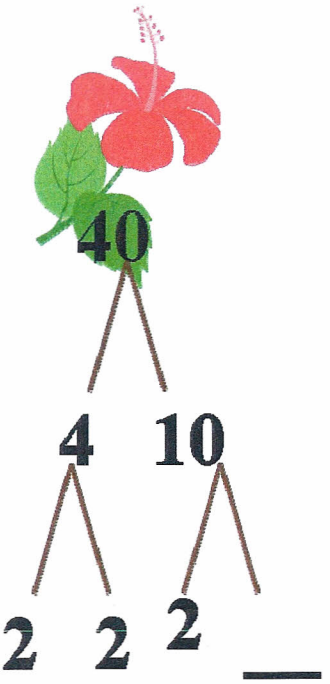
Smaller versions of this activity can be done using tooth picks. You can assign certain characteristics of composite number and students must provide an example, such as "This composite number has 2 prime numbers (21)." Or, "Show me 3 different ways you can find the prime numbers for the number 36 (starting factors: 2x18, 3x12, or 6x6)."

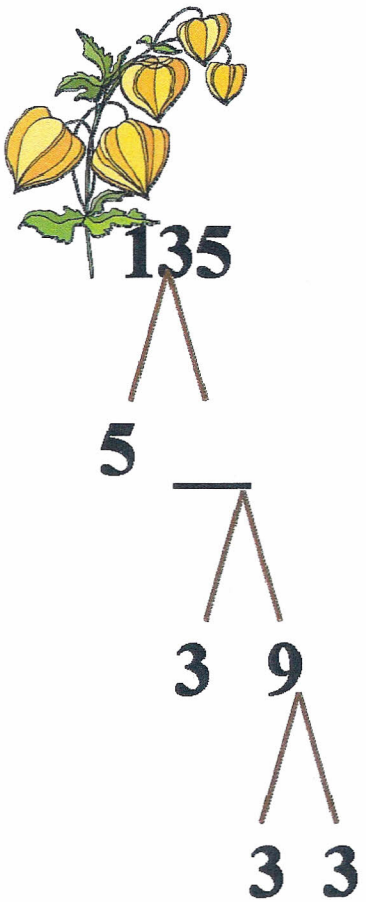
Students could also complete this activity using root vegetables. Discuss the structure of a plant, specifically the cells.

Modification

For lower grades, rather than using prime numbers, use addition facts.







Use this space to make your own prime factorization flower.

Tomato Life Cycle

Standards of Learning
Science: K.7, K.9, 1.4, 2.4, 3.8, 4.4

Objective
The student will be able to:
- Investigate the changes that occur in a plant's life cycle
- Correctly order the steps in the life cycle of a tomato

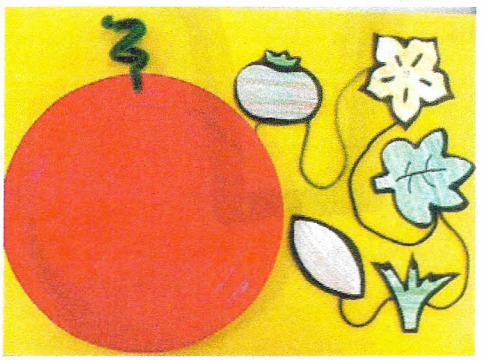
Materials
- Red paper plates
- White paper plates (cut in half)
- scissors
- staplers
- markers/crayons
- tomato life cycle template, attached
- green yarn
- tape

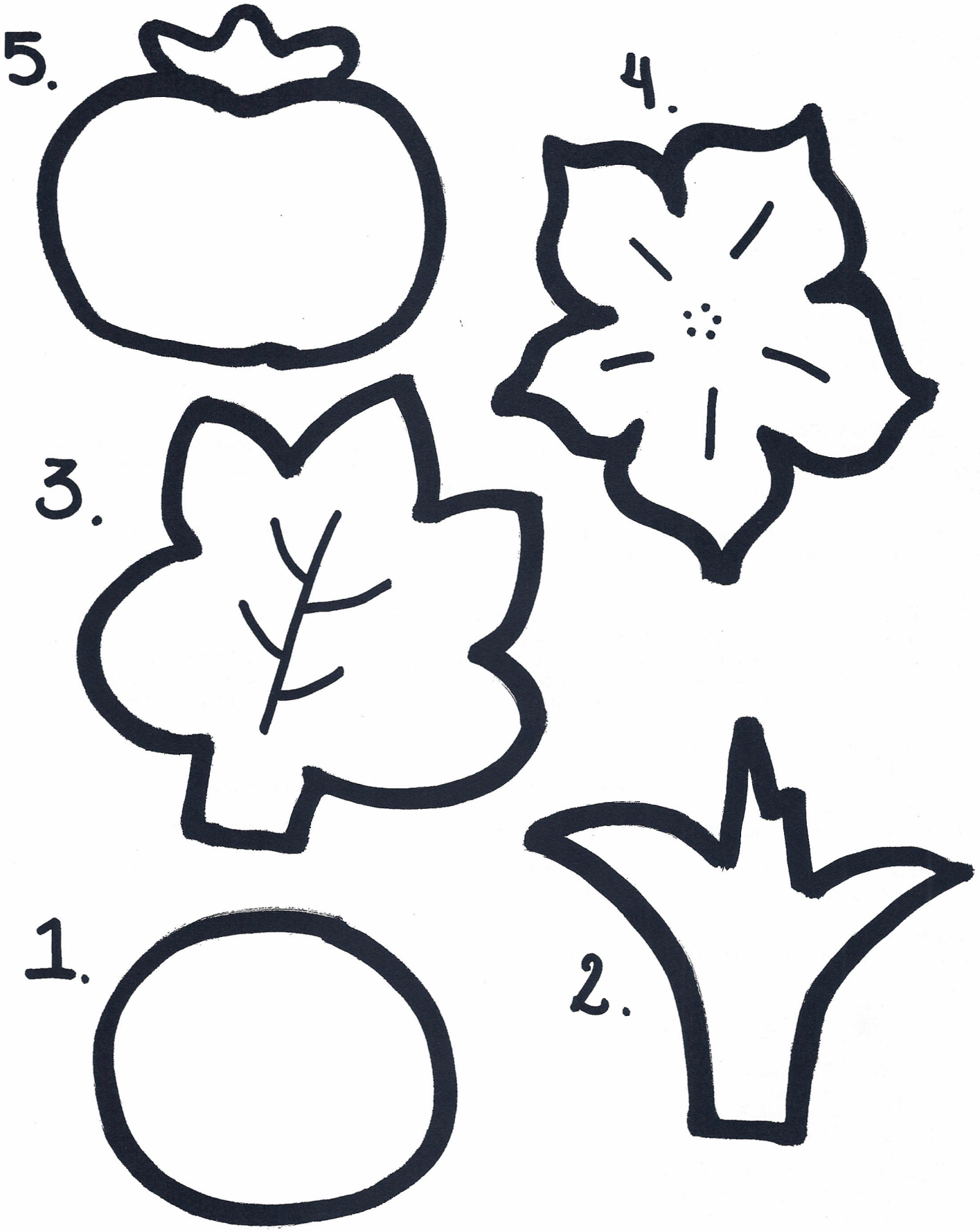
Background Knowledge
Tomatoes are used as fresh produce and to make ketchup and sauces. Tomatoes can be grown in the field, in the greenhouse and hydroponically (without soil). Tomatoes can be set out after the last frost and will produce fruit in 65 to 75 days. Tomatoes come in many sizes, shapes and colors.

Virginia is the nation's third largest producer of fresh market tomatoes. Many of these are produced on the Eastern Shore and sent by truck to markets and grocery stores.

Procedure
1. Introduce the lesson by asking students to brainstorm items they like that are made with tomatoes.
2. Review the steps in the life cycle of a tomato plant.
3. Pass out red plates and white half plates. Staple or tape the half plate to the back of the red plate.
4. Pass out the tomato life cycle template. Have students color and then cut out the stages. Sequence them in the correct order on their desks and write the correct ordinal number of the back of each – 1st through 5th.
5. Give each student about a yard of green yarn and have them tape the tomato stages to it in the correct order.
6. Tape the yarn to the back of the half plate so that the 1st step is the furthest from the plate and the 5th step is the closest.
7. Optional: Punch a hole at the top of the red plate and add a green pipe cleaner to form the tomato's vine.
8. Have students take turns with a partner using their chains to retell the story of the tomato's life cycle, pulling out the seed first and so on until they reach the mature tomato (the red plate).

Extension
Bring in different foods made with tomatoes and have a tomato tasting party!

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How Does Your Garden Grow?

Standards of Learning
Science: K.7, K.9, 2.4, 2.8, 3.4, 3.8, 4.4

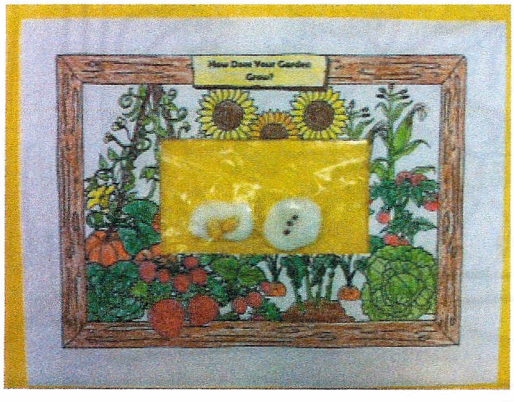
Objective
The student will be able to:
- identify plant needs for germination

Materials
- template, attached
- cotton balls
- spray bottle with water
- seeds
- crayons, markers
- tape
- snack-size plastic baggie

Background Knowledge
Germination is when the seed sprouts and begins to grow. It is important for your students to know that it starts right when there is a bud present from the seed. Explain to your students that their sprout will need a while to grow and that every plant is different in the amount it takes for them to get to maturity. Ask them what their plant will need to grow. All plants need water, light, temperature, time, soil (nutrients), oxygen, and space to grow to full maturity. The process that their plant is going to go through is also something that should be talked about and monitored for a few weeks. All plants go through about the same cycle of sprout, growth, flower, and fruit.

Procedure
1. Pass out garden frame template. Point on the various plants in it and identify the edible plant part from each.
2. Cut out the rectangle in the middle.
3. Review what a seed needs in order to germinate – water, air, warmth, and space.
4. Choose at least 2 different seeds to plant. Wet your cotton balls and place 2-3 seeds on each. Place in the plastic baggie and seal.
5. Tape behind the frame so that the seeds are visible and students can watch them germinate.
6. Hang in a visible place, preferably on a window.

Extension
Place a piece of graph paper behind the template so that students can measure and record the seeds' growth.




How Does Your Garden Grow?