Get Growing with AITC Garden Favorites

Classroom Lessons

Desktop Garden

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Flowering Factorization

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AGRICULTURE IN THE CLASSROOM℠
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Weyerhaeuser

Desktop Garden

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

Objective
Students will:
- Investigate seed needs for germination

Materials
- Medium to large-sized clean plastic lids (size from peanut butter or mayonnaise jars)
- Seeds
- Paper towels
- Water
- Aluminum foil

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, which is something you can show your students as they are creating their own dirt baby. 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. However, it is important to also point out to your students what their plant parts are since they will not have flowers or fruits. The basic parts of the plant to point out are roots, leaves, stem, flower, seeds, and fruit. Make sure to point out that not all plants have every part.

Procedure
1. Discuss seed germination with students and identify the conditions necessary for seeds to sprout.
2. Give every student a clean lid. Lay a couple of damp paper towels within the lid, you can fold or cut them to fit.
3. Sprinkle seeds onto the paper towels.
4. Cover the lid with aluminum foil.
5. Check the garden each day and record the seeds' progress. Be sure to keep the paper towel damp.
6. Once the seeds have sprouted, you can remove the aluminum foil and let them grow by continuing to water them.

Extension
Once seeds have sprouted students can decorate their "gardens" with rocks or small toys.

After germination, seeds can be potted in a container of soil to grow to maturity.

Credit
California Agriculture in the Classroom

Discover an Acre

Standards of Learning
Math: 3.8, 4.7, 5.8

Objective
Students will:
- Investigate perimeter and area using 12 inch squares to model a garden
- Measure the perimeter and area of a given space

Materials:
- 12" ruler
- 12" x 12" construction paper (at least one square per student)

Background Knowledge
The purpose of this activity is to provide students with a concrete and visual example of area and perimeter. Further, it will give examples of real-world applications for these math concepts in the context of designing and laying out a garden. In this lesson students will use one foot square pieces of construction paper to "plant" their garden. This is similar to a popular school garden layout – the Square Foot Garden. Square Foot Gardens are popular among classes and schools because each class or student can be assigned their own square within which to plant and harvest. It is also an optimal size for a child to use.

As mentioned in the Extension portion of this lesson, different plants can be planted within each square foot. Some will be planted one plant per foot, while others can be planted as 4, 9, or 16 per foot. The number of plants per square foot is dependent upon how large the plant gets. Because plants need sunlight, soil, water, and space to grow, planting too many in a square would cause them to not have adequate access to these growing requirements.

Popular plants to grow in a square foot garden are –
- One plant per square foot (12 inches apart): peppers, "patio" (dwarf bush) tomatoes, potatoes, broccoli, cabbage, cauliflower, kale, head lettuce, New Zealand spinach, peppers, peanuts, potatoes, large sunflowers
- Four plants per square foot (6 inches apart): leaf lettuce, parsley, Swiss chard, sweet corn (small varieties), mustard greens, basil, coriander, dill, parsnips, shallots, small sunflowers, turnips
- Nine plants per square foot (4 inches apart): bush beans, spinach, leeks, anise, chervil, corn salad (mâche), mustard greens, nasturtiums
- Sixteen plants per square foot (3 inches apart): carrots, beets, radishes, onions, cumin, garden cress

Procedure
1. As a class, brainstorm the units we use to measure various things. Examples: an eraser – centimeter; length of a pencil – inch; height of a door – yards; etc.
2. Ask the children how we would measure the amount of space or surface that a large object would cover (the yards of our houses, the field a farmer would plant a crop on, the land our school sits on, etc.) **Direct students to think about an acre, which is approximately 43,000 square feet.*
3. Discuss measuring area and inform the students that we often use square feet to measure area.

4. Show students what a square foot looks like by drawing a square on the board that measures 1 foot on all four sides.
5. Tell the children that today they are going to be planting a garden.
6. Give each student several 12" x 12" pieces of construction paper. Explain each piece of paper is a square foot. It measures 1 foot x 1 foot. The area of one piece of paper is one square foot.
7. Clear a space in the classroom or go to a room such as the cafeteria where students will be able to lay all of the squares on the floor and view them.
8. Ask the students to place each square on the floor one at a time to create their garden. The field can be any shape but each square **must** touch at least one side of another square.
9. When all the squares are laid down, tell students that you now want to construct a fence around your garden. What do you need to know about the garden to know how many fencing supplies to purchase?
    a. To answer this question students need to determine the perimeter of their garden by counting the outside edges. Bring in circulars from stores that sell landscaping materials, ask them how much the fencing supplies would cost. Is this the most cost effective shape for the garden? Point out that you will save money by having the smallest possible perimeter.
    b. Next, find the area by counting the squares.
10. Collect the squares and have the students create a new garden (different shape). Again calculate the area and perimeter of the garden. **This will show students that while the perimeter may change, area does not change simply because the shape changes.*

Extension

- Copy seed packet pictures from www.edhumeseeds.com and place on the square feet construction paper squares. Write under the seed packet how many of the given seed can be planted per square foot.
    - Use real seeds or colored cotton balls and have students "plant" according to the planting recommendations. Discuss why different plants have different planting recommendations.
    - Have children sort their field crops according to the parts of the plant they are or by how many seeds can be planted per square foot.
    - Incorporate multiplication word problems – Example: I have 4 square feet and want to plant parsnips. If I can plant 4 parsnip seeds per square foot, how many parsnip seeds can I plant?
- Design, plant, and grow a square foot garden.
- Take students outside with the 12" x 12" pieces of construction paper to find square footage and/or perimeter of common objects such as a sidewalk, door, window, a picnic tabletop, a seesaw, or a parking space.

Peek-a-Boo Flowerpot

Content Area
Science: Life Processes
Literacy: Vocabulary

Objective
The student will:
- Germinate a seed.

Materials
- Flowerpot template, attached
- Sandwich sized plastic baggie
- Cotton balls
- Water
- Seeds
- Tape
- Markers/crayons

Background Knowledge
The basic things a seed needs are light, food and water. Light is supplied by the sun or an artificial lighting system. Light provides the plant energy to perform photosynthesis, the process that the plant uses to make its own food. The seeds have a built-in food supply. The inside of a seed is the food supply once the seed has germinated, or sprouted. Once the plant reaches a certain age, it will start to take in nutrients from the soil through its roots to help with photosynthesis. Water is essential to all living creatures. Plants are no exception. They get water through the roots and through tubes, often called veins, in the stems and leaves. They get the water from the soil surrounding the plants. When the area their roots are in becomes dry, some plants will grow roots out to find a new source of water.

Ornamental plants and flowers, such as the type typically found in pots and containers are a part of the horticulture industry, which is an important part of agriculture. Horticulture encompasses cut flowers, landscaping plants and turf grass.

Procedure
1. Cut on the circle in the middle of the flowerpot to reveal a window for your seed.
2. Wet a cotton ball (it should be thoroughly wet, but not dripping).
3. Place 2-3 seeds on the cotton ball and then put inside the plastic bag.
4. Zip the bag closed and then tape behind the flowerpot window.
5. Students can then color and decorate their flowerpots.
6. Tape peek-a-boo flowerpots to the window so that students can observe their seeds' germination and growth.

Extension
After your seeds begin to sprout you may remove them from the plastic bags (do not pull the seedling from the cotton ball as the roots may rip) and replant in a container. Seeds/plants best suited for this are flowers such as daisies, marigolds, or zinnias or vegetables such as radishes, beets, or peppers. Herbs like rosemary, parsley, basil or cilantro are also an excellent idea for preschool container gardens.


Use the space above the pot to draw what your plant will look like after it grows.
Agriculture in the Classroom
Connecting Children to Agriculture

Use the space above the pot to draw what your plant will look like after it grows.

Rooting for Math

Standards of Learning
Math: *Dependent upon option selected.*

Objective
Option One:
Students will:
- Identify and describe the characteristics of prime and composite numbers

Option Two:
Students will:
- Identify correct equations to equal a given number
- Generate equations for a given number/fact family.

Materials
- Construction paper of every color
- Brown yarn or craft sticks
- Markers
- Scissors
- Tape or glue
- Worksheet for Option One (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.

Option One of 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.

Option Two of this activity can be used to teach either simple equations or fact families.

Procedure – Option 1
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.

Procedure – Option 2

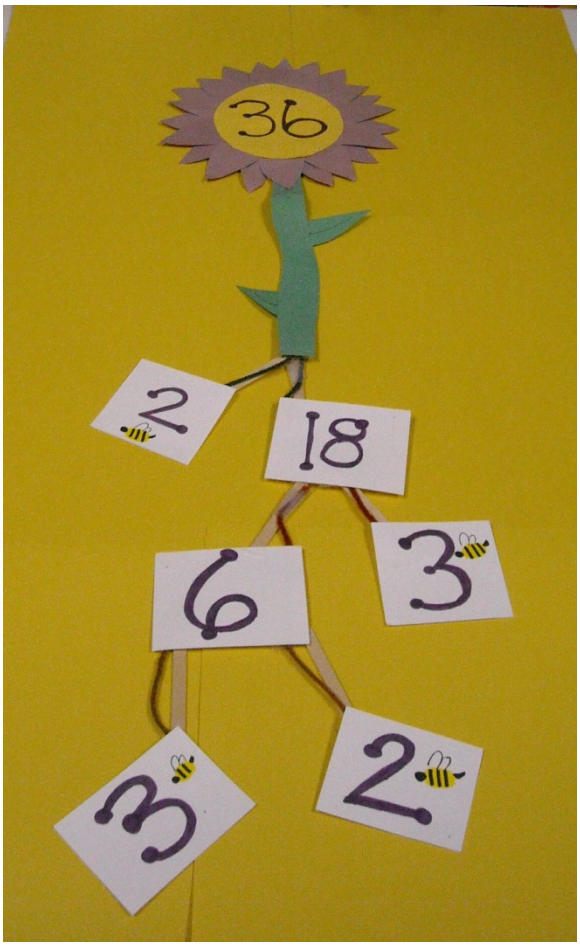
1. To teach fact families, begin with three flowers and place the fact family numbers within the blossoms. Construct the roots with equations that belong in the fact family.
2. Rather than building off of each number in the root, as with Option One, you will have several different root strings coming from the plant, each with an equation that belongs in the fact family. *See samples below.*
3. You may further simplify the activity by using one number (rather than 3 for a fact family) in the flower and having students create roots with equations that equal that number. On the stem of the plant write an "=" sign. *See samples below.*

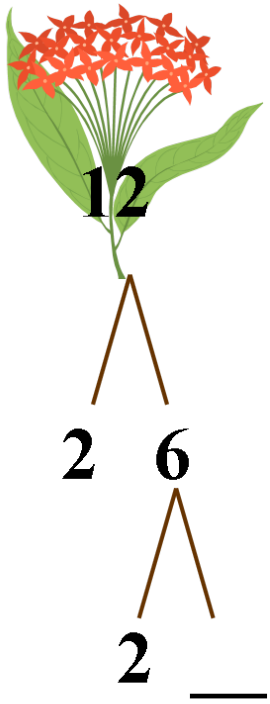
Extension

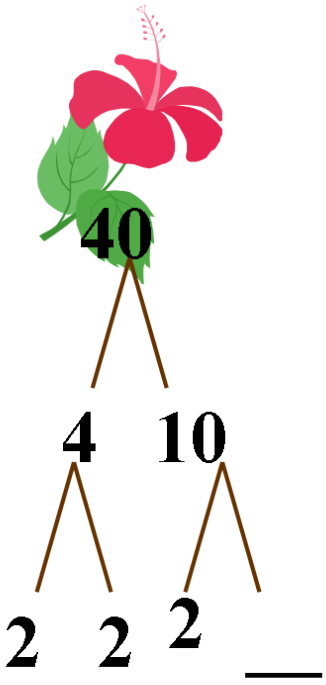
Smaller versions of this activity can be done using tooth picks. You can assign certain characteristics of composite number and students must provide an example, such as "This composite number has 2 prime numbers (21)." Or, "Show me 3 different ways you can find the prime numbers for the number 36 (starting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

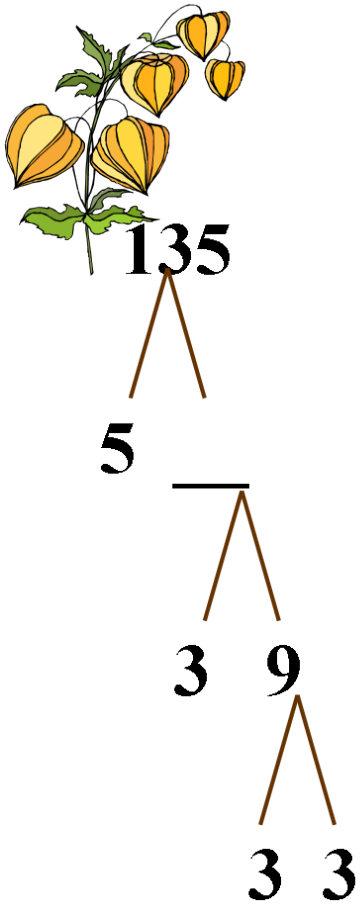
Students could also complete this activity using root vegetables. Discuss the structure of a plant, specifically the cells.

Option One (factoring) Sample and Worksheet:



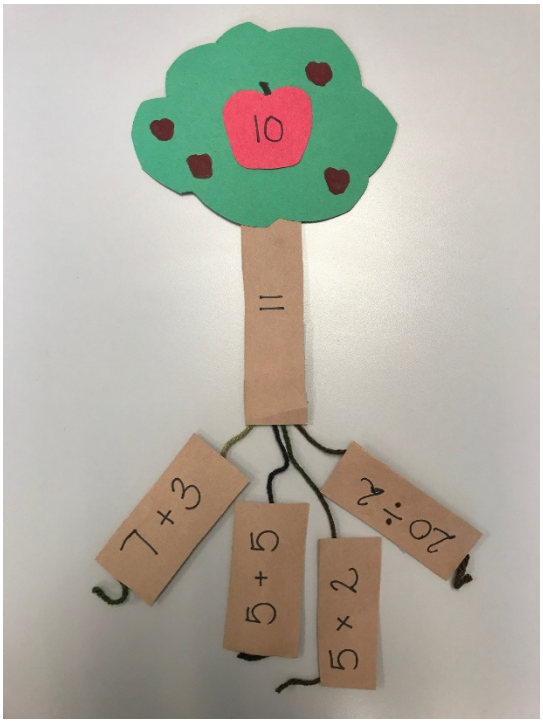


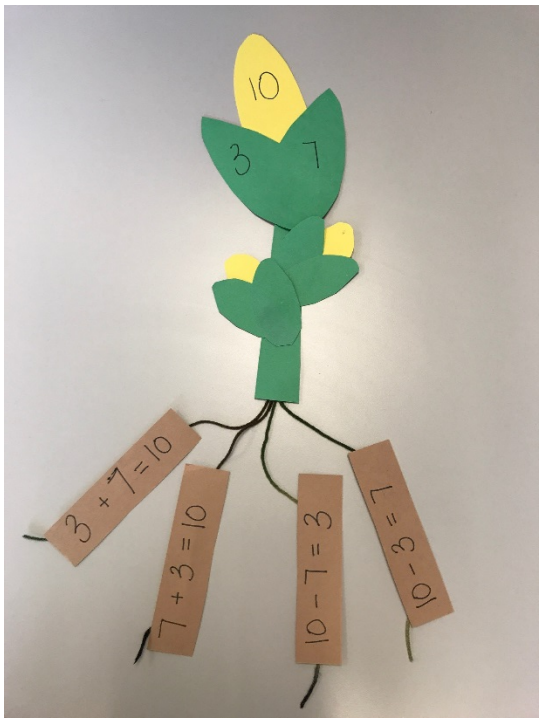




Use this space to make your own prime factorization flower.

Option Two (fact families and simple equations) Samples:





How Does Your Garden Grow?

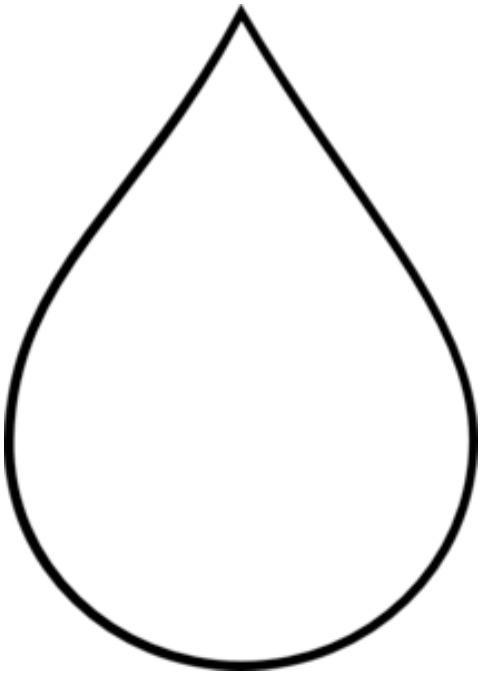
Content Area
Science: Life Processes

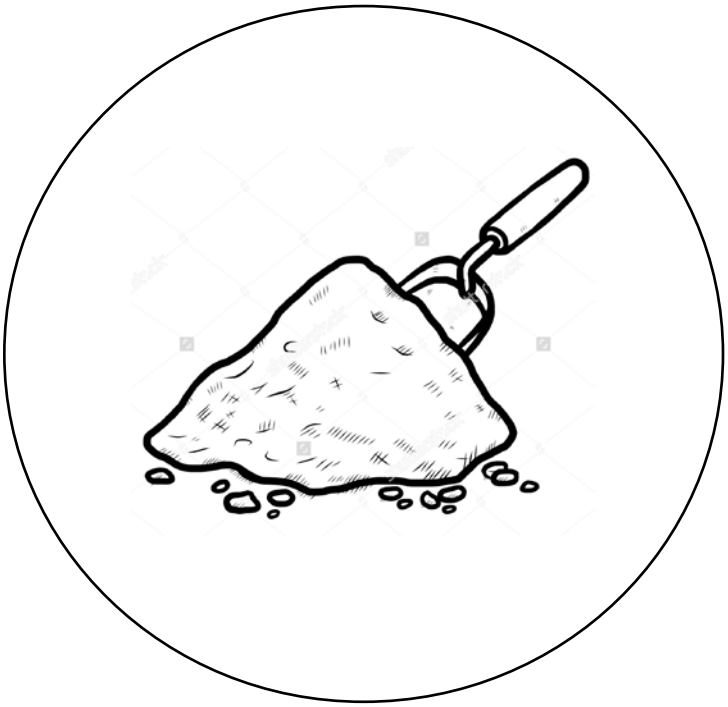
Objective
Students will:
- Identity water, sunlight, and soil as necessary to plant growth

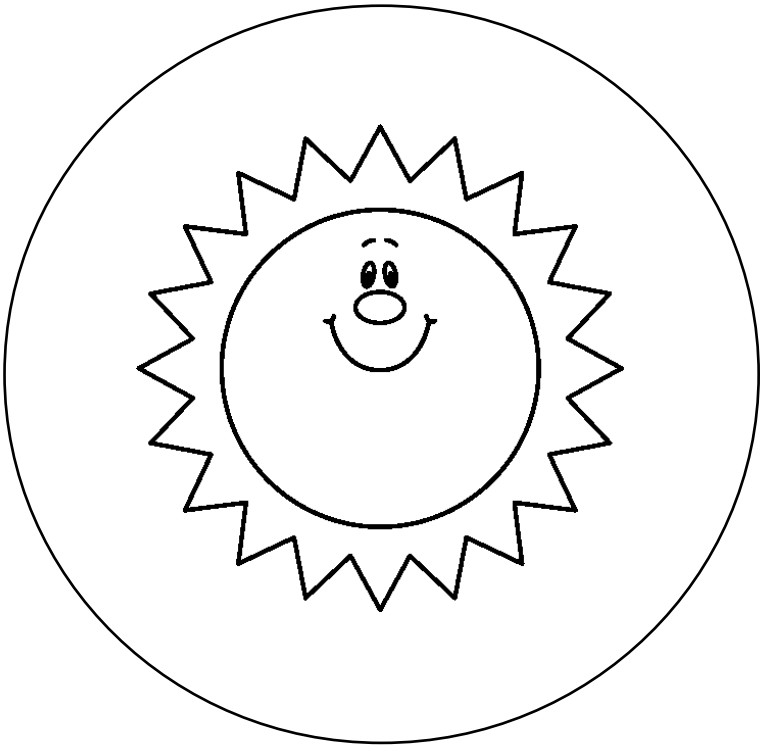
Materials
- paper plates
- yarn
- scissors
- stapler
- tape
- crayons
- glue sticks
- template, attached

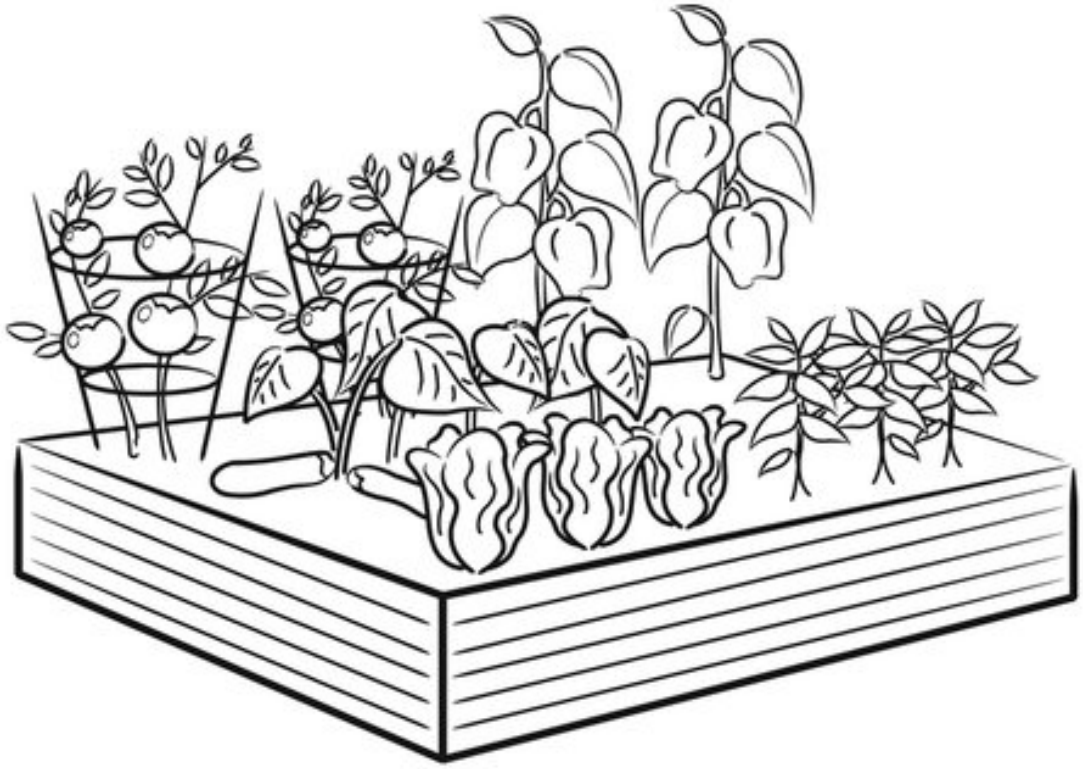
Background Knowledge
While they may differ in the specific amounts and type, all plants need the same basic conditions in order to grow and thrive – sunlight, soil, and water. Sunlight provides green plants with the energy plants needed for photosynthesis, which is the process plants use to convert carbon dioxide, water, and certain nutrients into carbohydrates that plants use for the energy to grow. Photosynthesis also generates oxygen. Soil contains healthy nutrients for the plant. They absorb these nutrients through their roots. Lastly, water is essential for a healthy plant cell to function.

Procedure
1. Cut a paper plate in half and staple together to form a semi-circle pocket, leaving the straight edge un-stapled.
2. Cut out (or have students cut) and color the elements for plant growth as well as the picture of the garden.
3. Glue the garden to the outside of the paper plate pocket. Identify the plants in the garden.
4. Next have students identify the pictures of the sun, water, soil as things that plants need in order to grow. Attach the three pictures to a piece of yarn using tape and attach the yarn to the paper plate.
5. The sun, water, and soil chain can go inside pocket and students can take turns pulling the chain out and identifying the conditions necessary for plant growth.









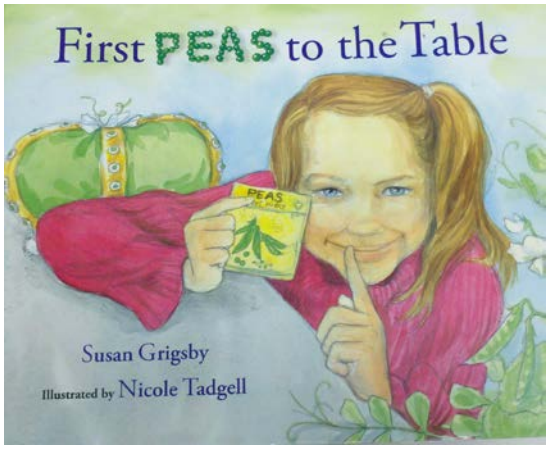
Life Cycle of a Pea

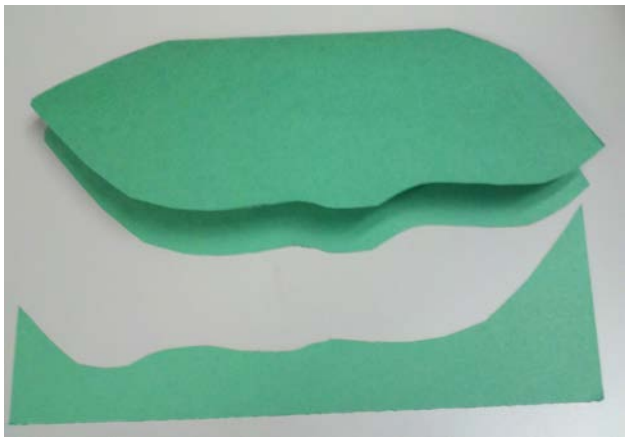
Objective
The student will be able to:
- Investigate the life cycle of a vegetable plant
- Investigate plant needs
- Sequence events
- Write with the purpose of describing, informing, and/or explaining

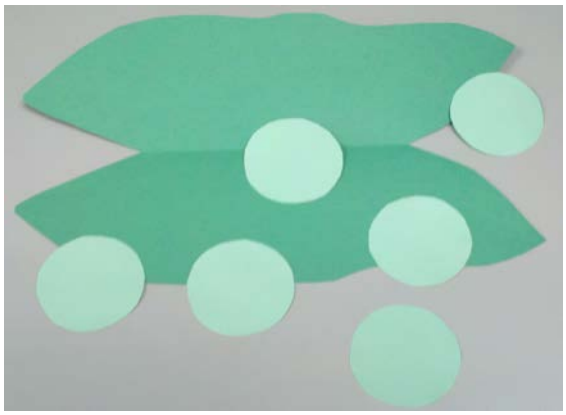
Materials
- 8 ½ x 11 piece of green construction paper
- Light green paper
- Circle pattern (preferably 2 inches of less in diameter)
- glue sticks
- markers or colored pencils
- scissors
- First Peas to the Table by Susan Grigsby (ISBN 978-0-8075-2452-7)

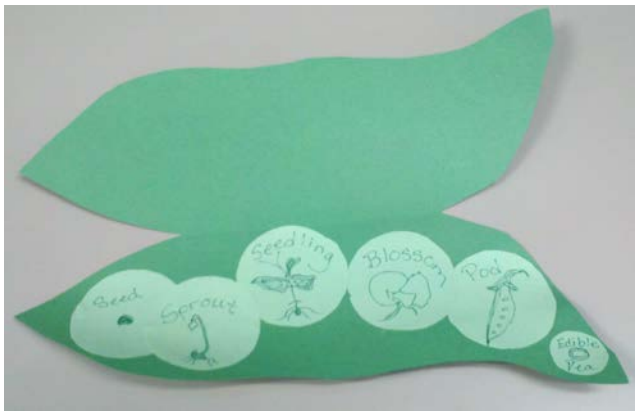
Background Knowledge
Plants undergo a series of changes from the time the seed is planted to the time that the plant reaches full maturity. First, the seed must germinate, or sprout. To do this, the seed requires moisture, warmth, air, and space. While the seed does not need soil to sprout, it does need the soil's nutrients in order to grow to maturity. After germination, the seed will grow roots down into the ground and shoots will begin to poke out of the ground. This is the seedling stage. Next, leaves and blossoms will appear on the young plant. After the blossom is pollinated, the plant will bear fruit. This process is the same whether the plant is growing in the wild, in a backyard, or on the farm. On the farm, after the plant bears its fruit, it is time to be harvested. Common plants which are planted and harvested yearly on Virginia farms include corn, soybeans, cotton, tomatoes, and wheat. Across the commonwealth farmers markets and produce stands are commonly found throughout the summer. Locally grown produce found at these markets include a wide variety of fruits and vegetables as well as local honey, jams, and pickles.

Procedure
1. Read and discuss ***First Peas to the Table*** by Susan Grigsby. Discuss the contributions of Thomas Jefferson.
2. Investigate the life cycle of a pea plant. Include how long the plant takes to grow to maturity, basic needs of the plant, and planting season.
3. Create a model of a school garden on the board or a large piece of paper.
4. Draw or trace and cut out 5-6 circles 2 inches or less in diameter. (I used a small bathroom disposable cup to create 2 inch circles.) Cut each of the circles out.
5. List each step of the life cycle on a circle.
6. Fold an 8 ½ x 11 piece of green construction paper vertically in half.
7. Draw a pea pod along the fold of the paper large enough to cover the entire half page.
8. Cut out the pea pod creating a bi-fold pea model.
9. Arrange the steps of the life cycle inside the pea model. Glue the "peas" down to create a bi-fold book illustrating the life cycle.









Extension

- Illustrate the elements of the story using the peas in the pod.
- Write a 5 sentence summary of the story using the peas in the pod.
- Create a bulletin board with a trellis, pea vine, and attach the student's peas pods.

Easy Spring or Fall Crops for the School Garden

Keep it simple and plant crops that will mature in the spring before the end of the school year or plant in the early fall before the danger of frost. The crops listed below are cool season crops and do well in the spring or early fall.

Size listed is for mature size. Most of the crops can be harvested before they are at their mature size and served as "baby vegetables," especially lettuce and spinach.

Vegetable crops need at least six hours of sunlight/day.

These vegetables can be grown in the ground, raised beds or in large containers.

Crop	Days to Harvest	Size	Comment
Beets	50 – 70	2 – 3" diameter	Harvest small outer leaves to use in salads.
Broccoli	50 – 65*	6 – 7" across	Side shoots may be harvested after main head is removed.
Cauliflower	55 – 80*	6 – 8" across	Tie leaves over head when head is 2 – 3" across.
Lettuce	45 – 60	4 – 6" tall	Harvest outer leaves first. Hot weather causes bitterness.
Peas	55 – 85	3" pods	Harvest when seeds are plump in the pod.
Radish	25 – 45	½ - 1 1/2 " diameter	Harvest before they become too large.
Spinach	45 – 60	6 – 8" tall	Can be harvested smaller. Eat cooked or raw.
Turnip	45 – 70	2 – 3" diameter	Greens can also be cooked and eaten.

*From transplants

SQUARE FOOT GARDENING

Square Foot Gardens are ideal for raised beds and a great way to have students take “ownership” of their own squares.

How To:

Mark off a grid of square feet using twine or wood slats. When planting, think in terms of squares rather than rows. The ideal size for a school square foot garden is 2 squares (feet) wide so that a child can work on each side of the bed. Allow at least 3 feet of spacing between beds to allow for access.

Planting Recommendations:

- One plant per square foot (12 inches apart): peppers, "patio" (dwarf bush) tomatoes, potatoes, broccoli, cabbage, cauliflower, kale, head lettuce, New Zealand spinach, peppers, peanuts, potatoes, large sunflowers, tampala (amaranth)
- Four plants per square foot (6 inches apart): leaf lettuce, parsley, Swiss chard, sweet corn (small varieties), mustard greens, basil, coriander, dill, parsnips, shallots, small sunflowers, turnips
- Nine plants per square foot (4 inches apart): bush beans, spinach, leeks, anise, chervil, corn salad (mache), mustard greens, nasturtiums
- Sixteen plants per square foot (3 inches apart): carrots, beets, radishes, onions, cumin, garden cress

Collect a Blooming Bouquet of Garden Books!

Garden Suggestion: Depending on the size of your garden, you may choose several stories to interpret or choose one and name the garden accordingly. Some good examples are *Peter Rabbit, Jack and the Beanstalk, Tops and Bottoms, The Tiny Caterpillar* and *Growing Vegetable Soup.*

You can also integrate literature into the garden with these great garden-themed children's books:

City Green by Dyanne DiSalvo-Ryan

The Curious Garden by Peter Brown

First Peas to the Table by Susan Grigsby

From the Garden by Michael Dahl

Garden of Happiness by Erika Tamar

Grandpa's Garden by Stella Fry

Growing a Garden by Mari Schuh

Growing Vegetable Soup by Lois Ehlert

I Heard it From Alice Zucchini: Poems about the Garden by Juanita Havill

One Watermelon Seed by Celia Barker Lottridge and Karen Patkau

Pick, Pull, Snap by Lola M. Schaefer

A Seed in Need: A First Look at the Plant Life Cycle by Sam Godwin

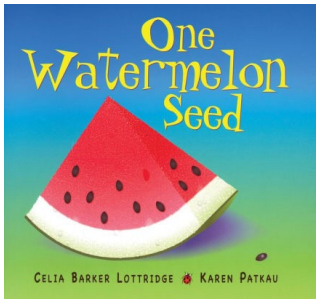
Surprising Beans by Molly Blaisdell

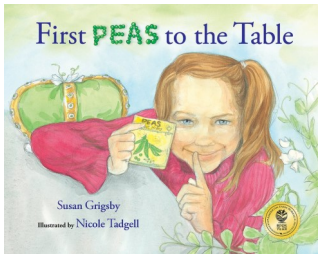
The Ugly Vegetables by Grace Lin

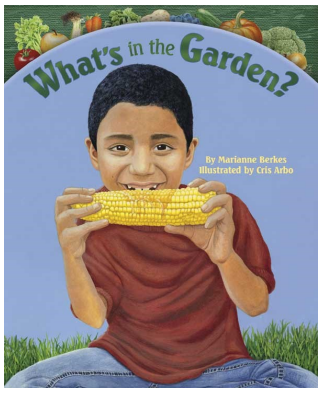
Up, Down, and Around by Katherine Ayres

The Vegetable Alphabet Book by Jerry Pallotta

What's in the Garden? by Marianne Berkes







WHAT'S GROWING ON IN VIRGINIA
Virginia Foundation for Agriculture in the Classroom
P.O. Box 27552, Richmond, Virginia 23261

Student gardens improve academic performance.

About the Newsletter

What's Growing On In Virginia? is a semiannual publication for Virginia educators and those who want to connect children with agriculture through education.

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For additional information and activities, visit our website at **AgInTheClass.org** or call **804-290-1143**

WHAT'S GROWING ON in Virginia

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THIS ISSUE

Collegiate School students dig up radishes that were planted by their class.

Benefits of school gardens include satisfaction, scores and skills

Along with the obvious benefits of watching things grow, educators have found that school gardens help improve academic achievement, create pride in the school and have a positive impact on students' behavior.

Research has shown that when school gardens are cultivated into students' curricula, their academic achievement grows. According to Michigan State University Cooperative Extension, 12 studies of school gardens between 1990 and 2010 found that "garden-based learning had a positive impact on students' grades, knowledge, attitudes and behavior."

North Carolina State University Cooperative Extension said gardening "offers schools a way of helping children to identify with their school and to feel proud of their own individual contribution. Gardening ties students to the social and material history of the land."

Other research indicates that students learn better when

Students check the growth of plants in their garden.

they are involved in the process. School gardens provide experiential, hands-on learning.

The informal, unstructured format of garden learning is flexible enough for different kinds of learners to benefit. "Gardening can bring any curriculum category to life—from language arts to lifestyle and nutrition," as well as math and science, according to MSUE.

Additionally, school gardening offers students opportunities for outdoor exercise while teaching them a useful skill. And gardens containing fruit and vegetables can help revise attitudes about particular foods, according to NCSU Extension. "School gardening, especially when combined with a healthy lunch program or nutritional education, encourages more healthy food choices."

So if you're going to plant a school garden, dig into our guidelines for growing a successful one.

Tips for starting a school garden

- Find a place with at least six hours of sunlight per day, good drainage, access to water and easy access from the classroom.
- Start small, even if it's just a few containers.
- Plant crops that will mature and produce fruits or vegetables during the school year. The following crops do well in the spring or early fall and can be grown in the ground, in raised beds or in large containers

Beets	Peas
Broccoli	Radishes
Cauliflower	Spinach
Lettuce	Turnips

- Plant flowering plants that will bloom during the school year.
- During the winter, grow plants in a cold frame (a transparent-roofed enclosure built low to the ground that protects plants from cold weather), or put the garden to bed until spring.
- During the summer, use the garden for summer classes, invite school garden club members and their families to maintain the garden, or allow school staff to maintain the garden.

Hints on maintaining a garden

Maintenance is the most critical part of a successful school garden. If it is poorly maintained, everyone will lose interest quickly and the garden will disappear.

- Include students and teachers as part of the lessons.
- Ask parent volunteers to assist with classes.
- Invite Master Gardeners to help teach gardening lessons.
- Enlist community garden clubs to assist with classes and teach gardening lessons.
- Establish an after-school or summer garden club with students, teachers and parents.

CONTENT AREA

Science: Life Processes

Objective: for students to:

- Identify water, sunlight and soil as necessary for plant growth.

Materials

- paper plates
- yarn
- scissors
- stapler
- tape
- crayons
- glue sticks
- template (See Page 4)

LESSON PLAN **Pre-K**

How Does Your Garden Grow?

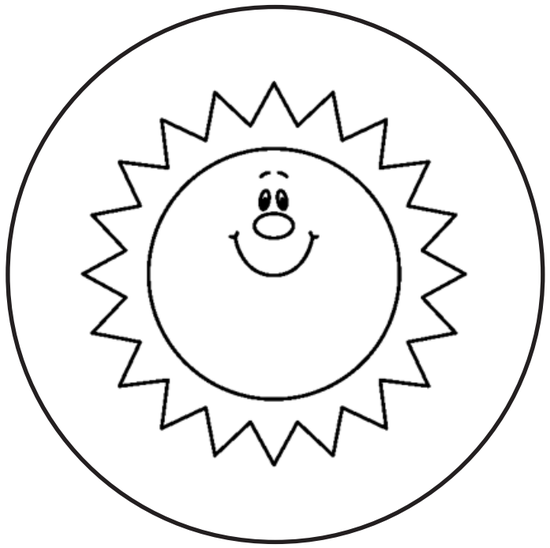
Background Knowledge

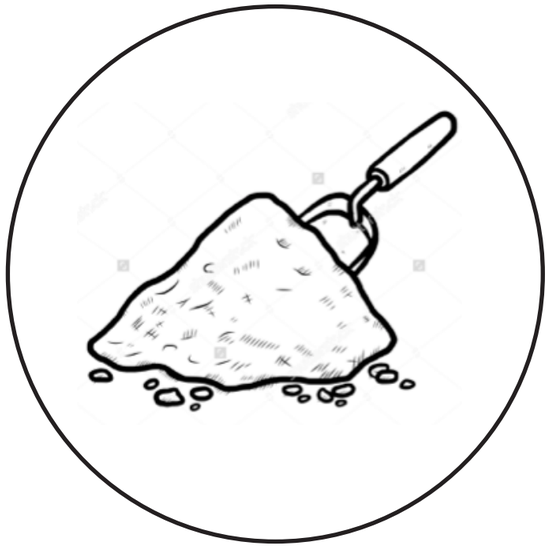
While they may differ in their specific requirements, all plants need the same basic conditions in order to grow and thrive—sunlight, soil and water. Sunlight provides green plants with the energy they need for photosynthesis, which is the process plants use to convert carbon dioxide, water and nutrients into carbohydrates they use for energy to grow. Photosynthesis also generates oxygen. Soil contains healthy nutrients for the plant, which it can absorb through its roots. Finally, water is essential for healthy plant cells to function.

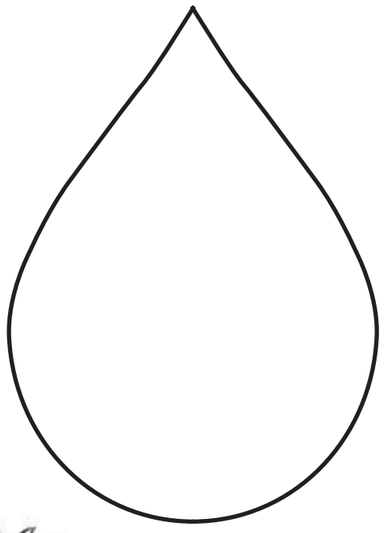
Procedure

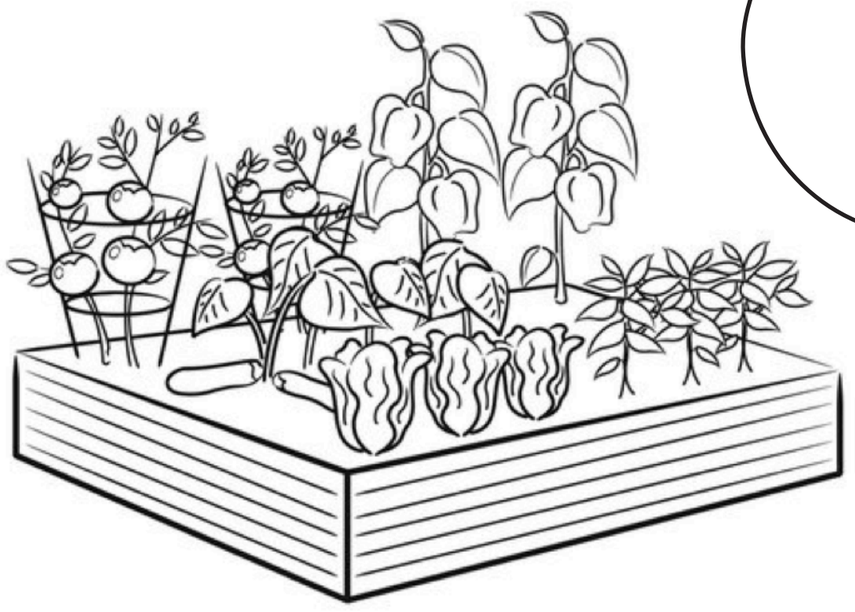
1. Cut a paper plate in half, and staple the halves together to form a semicircle pocket, leaving the straight edge un-stapled.
2. Cut out (or have students cut) and color the elements for plant growth, as well as the picture of the garden.
3. Glue the garden picture to the outside of the paper plate pocket. Identify the plants in the garden.
4. Next, have students identify the pictures of the sun, water and soil as things that plants need in order to grow. Use tape to attach the three pictures to a piece of yarn and then attach the yarn to the paper plate.
5. The sun, water and soil chain can go inside the pocket and students can take turns pulling the chain out and identifying the conditions necessary for plant growth.

Cut and color these elements









CONTENT AREA

SOL: Math 3.7, 3.8, 4.7, 4.8

Objective: for students to:

- Calculate area and perimeter for a given garden item.

Materials

- 8½" x 11" white paper
- 1" square pieces of construction paper
- pencils
- tape
- yarn (one yard per student)
- ruler, yardstick or tape measure
- dried beans, peas or corn
- small cups
- small to medium-size item from school garden (or from backyard) such as a leaf or blossom

LESSON PLAN **Elementary School**

GARDEN MATH: Measuring area and perimeter

Background Knowledge

Perimeter is the outside measurement of a given space. In gardening, it's important to know the perimeter of your garden so you know how much fencing to purchase. Area is the space within a given perimeter. You should know the area of your garden so you will know how much seed, fertilizer and mulch to purchase for that space.

For an excellent lesson to introduce your students to these concepts, search for the "Discover an Acre" lesson plan on **AgInTheClass.org**.

Procedure

A

1. Have students pick a garden (or backyard) item about the size of their hand and bring it into the classroom.
2. Students should trace outlines of their items on paper. A couple of small pieces of tape may be needed to hold items in place for tracing.
3. Remove the items to reveal their outlines.
4. Give each student a piece of yarn about one yard in length.
5. Ask them to use the yarn to outline the perimeters of their traced objects.
6. Cut the yarn at the point where it overlaps the starting point.
7. Remove the yarn from the paper, and lay it on a ruler, yardstick or tape measure to determine the perimeter of the garden item in inches.
8. Write the answer on the paper with the outline. **Example:** perimeter = 14"

B

1. Give students a 1" square of colored construction paper, and have them glue it to the paper with the outline.
2. Give students a small cup with dried beans (You also may use peas or corn).
3. Ask them to fill the square inch with the dried beans, laying them side by side.
4. Count the number of beans in the square inch, and write that number on the paper beside the square inch. **Example:** 18 beans = 1 square inch
5. Estimate the number of beans needed to fill their garden item outline, and write that estimate on their paper.
6. Fill the leaf outline with dried beans, laying them side by side.
7. Count the number of beans in the outline, and record the total.
8. Divide the number of beans in the outline by the number of beans in the square inch to give the total number of square inches in the garden item.

Extension

Have students measure the perimeter and area for other items and spaces within the garden. Items that can be measured are table tops, stepping stones, a sidewalk or a raised bed. Small spaces can be measured in inches and square inches, while larger spaces can be measured in feet and square feet.

BONUS ACTIVITIES

Grow an edible plant parts garden

Students harvest the fruits of their labor.

We typically eat parts of plants but not all of them. The following is a list of some favorite edible plant parts that can be grown in a Virginia garden:

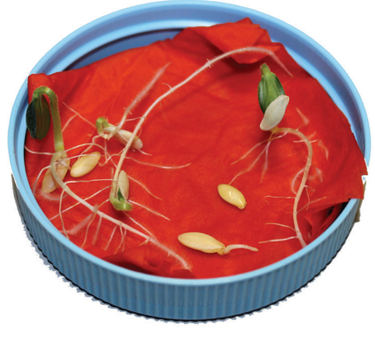
- the roots of carrots, beets, radishes, turnips and sweet potatoes
- the stems of asparagus, kohlrabi and potatoes
- the leaves of lettuce, spinach, cabbage, Swiss chard, collards, kale, mustard greens and bulb onions
- the flowers of broccoli, cauliflower, nasturtiums and violas
- the fruit of tomatoes, peppers, cucumbers, squash, beans and peas (in the pod), eggplant, melons and pumpkins
- the seeds of beans and peas (shelled), corn and sunflowers

You can plant these fruits and vegetables and then eat the edible parts after harvesting. The garden should be located in an area that receives at least six hours of sunlight daily.

Let students create a desktop container garden

Give every student a medium- to large-size plastic lid (the size from a peanut butter or mayonnaise jar). Place a couple of damp paper towels inside the lid. Sprinkle seeds on top of the damp towels. Then place the lids in a clear plastic bag to keep them moist.

Have students check their "gardens" each day and record their progress. After they germinate, the seeds can be transplanted to a container of soil or to the school garden plot to grow to maturity.



LITERARY CORNER

City Green, DyAnne DiSalvo-Ryan, Houghton Mifflin, ISBN: 0395810973

The Curious Garden, Peter Brown, Little, Brown Books for Young Readers, ISBN: 0316015474

From the Garden: A Counting Book About Growing Food, Michael Dahl, Picture Window Books, ISBN: 1404811168

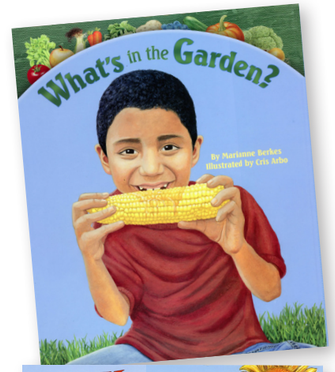
The Garden of Happiness, Erika Tamar, HMH Books for Young Readers, ISBN: 0152305823

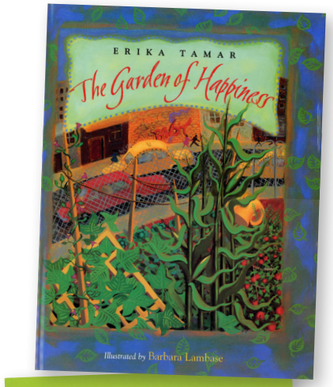
Grandpa's Garden, Stella Fry, Barefoot Books, ISBN: 1846868092

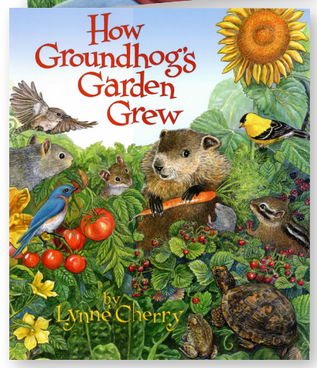
Growing a Garden, Mari Schuh, Capstone Press, ISBN: 1429648422

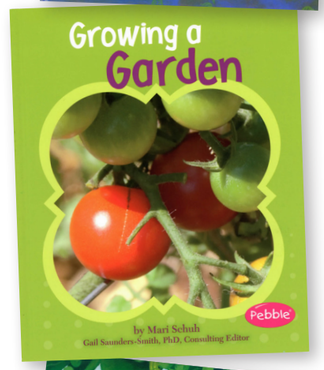
How Groundhog's Garden Grew, Lynne Cherry, Blue Sky Press, ISBN: 0439323711

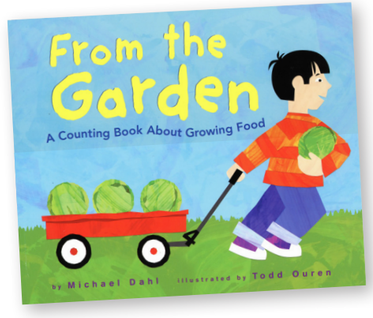
What's In the Garden?, Marianne Berkes, Dawn Publications, ASIN: B00C5W7X1K

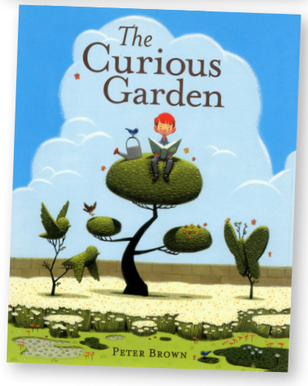


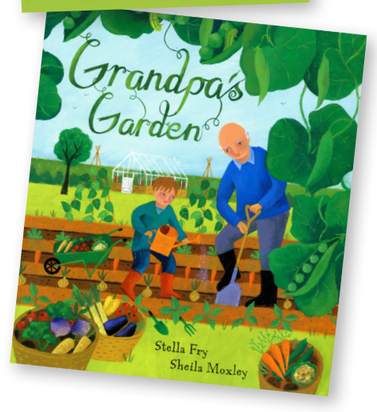












PROGRAM HIGHLIGHTS

Student learning can grow with AITC garden grants

Teachers who want to start a school garden can apply for up to $250 in grant funding from Agriculture in the Classroom. AITC also offers $500 Agricultural Experience Grants for teachers who incorporate ag-related programs other than a garden in their classrooms.

Grant applications will be accepted this summer. Visit our website, **AgInTheClass.org**, and join our mailing list so you will be notified when applications are available.

Grant recipients have used funds for a wide range of exciting educational opportunities such as creating a pollination garden, salad garden and even a historical Jamestown-inspired garden. Others have used their garden grants to explore aquaponics, native Virginia plants and composting.