### Planting a Garden – for a second year

**Lesson Seven:** How do you plant a garden the second year?  
For March

“Planting Our Healthy Garden” from GROWING IN THE GARDEN: LOCAL FOODS AND HEALTHY LIVING, Iowa State University Extension and Outreach. It’s time to plant the garden you’ve been planning. Depending on your location, you may need to wait another month before planting. Students will learn about the food system by planting, watering, maintaining and eating goods grown in the garden.

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<th>Content objectives:</th>
<th>Identify and implement efficient and productive methods to prepare the soil for gardening; Mark a garden; Plant seeds, sets, or transplants; and water the garden for the first time</th>
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<td>Life Skill objectives:</td>
<td>Healthy lifestyle choices, Critical thinking, Communication, Citizenship, Leadership, Decision making, Problem solving,</td>
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**Core and STEM concepts and skills:**

- **Science**  
  Science as inquiry, Earth and space, Life science

- **Math**  
  Operations and algebraic thinking, Numbers, Measurement and data, Geometry, Mathematical practices

- **Language Arts**  
  Reading for information, Vocabulary, Speaking, Listening, Viewing

**Healthy snack:** Water and a simple fresh fruit or vegetable snack with or without dip

**Additional and supporting resources:**

Cooperative Extension Master Gardener’s Program can be a resource for planting your garden.
**LESSON PLANS FOR 2012-13 SCHOOL YEAR, GRADE 5**

**March:** How do you plant a garden the second year?

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- Lesson: Planting Our Healthy Garden
- Growing in the Garden: Local Foods and Healthy Living
- Iowa State University Extension and Outreach
- Garden Journal: See the Before section of the Lesson Plan
- Recipe: Healthy Snacks (See Before, #7)
BEFORE THE LESSON

1. Grade 5, March: Planting the Garden, 2012-13 School Year
   This document contains all the curriculum items and resources you need for this lesson. All lesson downloads are located on the www.peoplesgarden.wsu.edu Educational Toolkit. Please read through everything well in advance of delivering this lesson.

2. Gardening Tips for Working With Kids, Healthy Gardens, Healthy Youth Partnership
   How do you plant a garden? Iowa State University Extension and Outreach
   Master Gardeners and extension educators created the tip list based on their experiences gardening with kids for this project and for related summer programs. You may want to make a copy to keep handy throughout the gardening season. The garden planting document provides information about garden seeds and plants, tools, planting times, and a garden plant shopping list. You may want to read through it to do an inventory of garden supplies and fill in the gaps.

3. Check with Extension or gardening experts to find out when you can plant cool season and then warm season crops in your region. If you can’t plant in late March or early April, please do a lesson you missed in the fall or trade this lesson with the April lesson.

4. Please follow-through with the notes from your January garden planning session.
   What changes are you incorporating into your garden?
   What did the students decide to plant and why?
   Is it a cool or warm season crop?
   Where are you planting and what method are you using? (Square foot gardening or row gardens)
   Who are your garden helpers and how can you prepare them?
   Are the planting supplies ready to go?

5. Make sure you have all the supplies you will need to do the lesson, plant the garden, drink water, and eat a healthy snack.

6. Garden Journal
   If they haven’t done so already, this is a good time for each student to start his or her own Garden Journal. Each time you do a lesson or go out in the garden, there is an opportunity to add something new to the Garden Journal. Provide 1” vinyl binders or sturdy plastic folders with 3-ring binders so that students can take their journals to the garden and add pages, activity sheets, charts, recipes, etc. The binders with a clear sleeve on the front are nice because students can design their front cover on a heavy piece of paper and slide it into the sleeve. The students can also design their own inside cover page. Provide permanent markers so they can at least creatively write the title, using their first and last name such as “Charlie Smith’s Garden Journal”, on the front of the binder or folder. We have found that it works best to collect the journals after each use. Students can also keep their Garden Records in their journal notebook. See The Lesson Section, Garden Record, for more details. Your Extension organization may have additional suggestions for garden journals.

7. Recipe:
   Since planting the garden takes quite a bit of time and clean up, we are suggesting water and a simple fresh fruit or vegetable snack with or without dip. Students can help prepare the snacks before planting the garden. The snacks and dips can be chilling and ready when they are done gardening. Here are some simple dip recipes or you can buy dip – try to keep it low fat.
Quick Fruit Dip
In a small bowl, mix 1 cup of plain yogurt with 2 teaspoons of brown sugar.

Zippy Vegetable Dip
1. Combine 1 cup of low fat cottage cheese, 1 cup of plain yogurt, and 1 1-ounce package of dry ranch dressing in a blender. If you don’t have a blender, use a mixer.
2. Blend on medium speed approximately 30 seconds or until the mixture is smooth. Stop the blender a few times to scrape the mixture down the sides. If it is too thick, thin it with 1 or 2 tablespoons of skim milk or buttermilk.

THE LESSON
1. You may want to work on the Planting Our Healthy Garden lesson over a period of days. The outline below provides ideas so that you can determine how and when you want to complete the lesson. The 5th grade students did this lesson last year but everyone needs to know all these things every time they plant a garden. There are sections that you may skip because of the type of garden you are planting. Here is a basic outline of the lesson.

Introduction: Use your Our Healthy Garden Plan to prepare to plant it

Do: Discuss what everyone knows about seeds, sets, seed pieces, and transplants
Get Ready, Get Set, GROW! activity sheet (Include in Garden Journal)
Garden Challenge Matching Game

Reflect: Choosing the Best Method for Planting Crops
Choosing Tools and Learning How to Use Them (Include Know Your Tools and Garden Tools Crossword Puzzle activity sheet in Garden Journal)

Apply: Garden Rules
Planting your garden (choose the type you are working in)
Starting Seeds Indoors (optional)
Wrap up and Healthy Snack
Garden Record (include in Garden Journal)

AFTER THE LESSON
1. You may want to add more pages to the Garden Journals so they can use their journals to do gardening at home. Here are some page ideas:
   a. Draw or right down how each plant was started (as seeds, sets, seed pieces or transplants) and how deep they planted them.
   b. Make predictions, with or without reading the seed packet, about when they will see the sprouts coming up out of the soil.
   c. Write the dip recipes down so that they can make the dips at home.
USDA FNS People’s Garden School Garden Pilot Project: 
Healthy Gardens, Healthy Youth

Tips for Working with Kids and the Garden

The following tips are from HGHY Master Gardeners and site leaders and are based on their experiences gardening with kids. These are tips for both school and the summer programs. A sample in-garden lesson outline can be found at the end of this document.

Be Prepared

- Send home information about the garden program including the details about who is leading the program, what the kids will be doing, where the gardens are located, when the kids will be gardening, what is happening with the garden produce, and expectations of the young gardeners. All gardeners should be wearing close-toed shoes and have sun protection. They will not be allowed to work in the garden or with food if they are sick or have been sick within the last 24 hours.

- Every time you go to the garden, take supplies such as a first aid kit, wet wipes, water jug with cups (or have kids bring their own water) and water for washing the produce.

- Use lesson plans and educational resources to prepare for each session. Play a game, sing a song, act out a play, read a book, or make a garden-based craft each session. Remember to have fun! See the Sample Garden Session outline at the end of these tips.

Working With the Kids

- Make sure the young gardeners know the 3 R’s garden rules: Respect, Responsibility, Readiness.

- Be fully prepared before heading to the garden so there will be little down time for the kids. The tools and any supplies should be easy to access and ready to go. Break large groups into manageable sizes. Have more than one activity and rotate them. Keep every child busy and on task or their attention will shift and they will drift. Have enough adult supervision to make this happen.

- Always demonstrate before letting the kids work on their own. The more adult helpers you have to float around and guide the kids, the better. Do not do things for the kids, show them how and have them show you how back.

- Check their work. Don’t take their word for it when they say they have completed a task. You might find that things were missed.

- Take frequent shade and water breaks. Break times are good times to introduce healthy snacks, books, garden journals, or other hands-on activities.

- Every child will appreciate some one-on-one time with instructors while working in the garden. Let them tell their stories and show you the weeds they found and pulled, etc.
Planning the Garden

- Use the hands-on, deeply aligned classroom lessons to help the students plan their gardens. The kids will have fun learning and taking ownership of the garden. They will get excited about choosing what to plant and how much they need to plant by doing these lessons. A Master Gardener or an experienced gardener is a valuable resource to help kids discover what crops can be grown in the climate and in the amount of space they will have to garden. Start a Garden Journal or Garden Records right away.

- Young students are not able to prepare the site for gardening. Master Gardeners and others can provide leadership for that. FFA students, parents, Ameri-Corps, Food Corps, garden clubs, retired teachers, neighbors and others have been instrumental in preparing the gardens and helping the youth in the planning stages.

- For the young children, have the sections of the garden already measured out and marked according to the garden plan. For the older youth, help them measure and mark the garden sections.

- Kids like to use garden tools, but they LOVE to use child-sized tools such as kid-sized rakes, hoes, shovels, watering cans, and gloves. The type of garden tools they need depend on the type of garden they will be working with and how it is planted – square foot vs. rows. They can share tools. Older students have been using adult-sized tools and even tools that have been loaned by Master Gardener groups.

- Master Gardeners and FFA members are using their green houses to start seeds and grow transplants for the school gardens.

Help the students start a compost bin and get the whole school involved.

Planting

- Go over tool safety rules for hoes, trowels, and rakes. A tool safety game is part of the gardening curriculum.

- Go over ways the plants in your garden are going to be planted: seeds, sets, transplants, seed pieces.

- Plant fast growing (cool season) crops like radishes and spinach for early satisfaction. Try to stagger your crops for constant harvest opportunities. Make sure the students will have something to harvest when they return to school in the fall.

Maintaining

Watering

- Watering is extremely important, especially in raised bed gardens. If you are meeting just once a week, you may have to make plans for additional watering. Families, youth groups, organizations, neighbors can sign up for times. Someone will need to be responsible to make sure the watering plans are carried out.

- Using a watering wand is a good way to water the garden. Show how to water at the base of the plant. Teach the kids to count how long it takes to water a plant.
Weeding
- Help the kids distinguish the difference between weeds and garden plants. Show them how to pull weeds so that the garden plants are not disturbed. Tell them where you want them to put the weeds. Have challenges such as finding the biggest weed, most unusual weed, most weeds, etc. Talk about why some parts of the gardens have more weeds than other parts, etc.

Insects and pests
- Insects intrigue and scare children. They enjoy doing the lessons about pests and going on hunting missions to find and eradicate them. Getting to show everyone the squash bug they found – and sometimes their eggs – is a joy in and of itself!
- Use the lessons from Grades 2 and 4 to identify “good guys” and “bad guys” in the garden and to figure out what to do about them. Then help the kids take the next steps to protect their garden from unwanted pests.

Harvesting, Preparing and Eating the Produce!
- Kids get excited when they see fruits/vegetables growing on the plants. Make sure that they show everyone by pointing and not picking! Describe what to look for to determine when the fruits/vegetables are ready to harvest.
- Show kids HOW to harvest produce gently. For example, gently hold a bean plant before pulling off the bean, cut the lettuce with scissors, etc.
- Kids love to harvest and taste the bounty. Try to include this in every lesson.
- Include in the lesson, ideas for how the food can be eaten. Simple recipes such as cucumber-flavored water, radish or veggie sandwiches, veggies with dip, cucumbers and onions in vinegar, etc. are the best. Get a large bottle of Ranch dressing because the kids will try anything they can dip! There are several ideas in the lessons.
- Show the whole vegetable before cutting it open. Have them find the seeds.
- Plastic plates and knives can be used for cutting and preparing produce.
- Help the kids put their gardens to bed.
Sample Gardening Session

1. Meet in gathering area
   a. Remind everyone about behavior expectations.
   b. Chat a bit – What’s up?
   c. Give garden plan for the day
   d. Split into smaller groups if necessary
   e. Have a planned garden activity for each group with an adult supervisor

2. Garden projects
   a. Planting
   b. Weeding
   c. Pest patrol
   d. Watering
   e. Harvesting
   f. Washing
   g. Cutting (if necessary)

3. Snack time
   a. Make their own snacks
   b. If there is nothing to harvest, consider produce from farmer’s markets
   c. Focus on fruits and vegetables
   d. Send ideas home to the families

4. Activity session – see lessons for ideas for games, songs, stories, plays, crafts

5. Go home!
How do you plant a garden?

UNIT 5 INTRODUCTION

Lesson Contents
- Planting Our Food Garden (Grades K through 4)
- Planting Our Healthy Garden (Grades 4 and up)

General Information
Planting is one of the most exciting aspects of gardening. It is the beginning of an adventure and the next step toward producing a crop to harvest. The lessons in this unit will guide youth to implement the garden plans they created during the Planning Our Food/Healthy Gardens lessons. Together, you will look at seeds, sets, transplants, seed pieces, garden tools, tool safety, planting methods, and watering. This Introduction will help you to prepare for a successful gardening experience. Extension Master Gardeners, local foods producers, and avid gardeners would be good partners throughout this unit and can provide their expertise throughout the rest of the gardening season.

Garden Seeds and Plants
Every year you will need to prepare a “shopping list” for the seeds and plants that you are going to need for your garden. The “Garden Plant Shopping List”, found at the end of this Introduction, is a worksheet that will help to determine how much to buy. You may want to work through the columns with the older youth, but it is too complicated for the younger ones.

Seeds can be purchased early in the season, weeks before they are actually planted. Seeds should be stored in an airtight plastic container and kept in a cool, dry location until planting time. Although most left over garden seed can be saved until the following season, some may not germinate well if it isn’t stored properly. If you have left over seed, seal the open end of the packet with tape and store it in an airtight container in the refrigerator or location with a consistent temperature, not a garage or storage shed.

At planting time, keep the seeds dry prior to planting. Carefully tear or cut off the top edge of the packet to leave the plant descriptions and planting instructions intact. For ease in planting, you may want to pour your small seeds in a clean and dry recycled shaker such as a spice or cheese container. Be sure to label the shaker and keep the seed packet with the shaker. For slightly larger seeds, you may want to use the pinch cup method. Right before planting, pour the seeds in a labeled 3 to 5 oz. plastic cup so that the students can pinch out a few seeds for planting. Larger seeds can be poured into small labeled plastic containers such as labeled butter tubs. For any of these methods, keep the seed packets near the matching containers so that everyone can read the descriptions and planting instructions. Return extra seeds back to their original packet.

General Information continued on the next page.
Some crops, such as tomatoes, peppers, eggplant, broccoli, and cabbage are planted as transplants to get a jump start on the growing season. The seeds are planted indoors in small containers or cell packs 5 to 8 weeks before being planted in the garden. For information and activities to grow your own transplants, please refer to the Starting Seeds Indoors activities found in the Apply section of lesson 5B. Be sure that you have the right amount of sunlight, heat, protected space, and time before starting your own transplants.

Before transplants are planted in the garden, set them outside in a shady location for a few days and keep them watered. Gradually move them into the sun. After five to seven days they should be ready to plant in the garden. This is called “hardening off” and prepares the plants for the outdoor environment and reduces the shock associated with transplanting.

When it comes to planting, remind the students that transplants are “baby plants” and should be handled gently and carefully like other babies. Transplants in cell packs can be removed from the packs by pushing up from the bottom. Use care when handling the plants because the plants will not survive if the stems are broken. If tomato transplants are tall and leggy, they can be planted a few inches deeper in the soil. However, most other plants should not be planted more than an inch deeper than what they were growing in the cell pack. Immediately after planting, generously water the soil around the transplants.

Potatoes are planted using seed pieces that are actually potatoes that have been grown specifically for planting. You can purchase them at local garden centers early in the spring. Select potatoes that are firm and just beginning to sprout. Avoid those that are soft, show signs of rotting, or have sprouts more than a quarter of an inch long. Do not use potatoes from home that have sprouted.

Cut the potatoes into sections with one or more “eyes” or sprouts on each piece. Each eye, or bud, has the potential to sprout a stem. One potato can be cut into 2 to 4 pieces. The potatoes can be cut into seed pieces the day before planting and stored in a paper bag. Plant them a foot apart, about 4 inches deep with the sprout side up (cut side down).

Onions are often planted as small, dry onion bulbs called sets. These are easier for children to handle and plant as compared to the small onion transplants that are sold banded together in bunches. Onion sets are sold in bulk or in mesh bags. Purchase sets that are firm and not yet sprouted. Plant them about 3 or 4 inches apart and about 1 inch deep with the pointed end up.

TOOLS

Tools are an important part of gardening. Having the right tools on hand makes the planting more efficient and successful. Lessons 5A and 5B include tool identification, handling, and safety activities. The following tool list is a guide to the types and amounts of tools you may want to acquire for gardening with a group of youth. How many of each tool depends on the number of young gardeners working in the garden at the same time and the size of the garden space. If there are several gardeners, the best way to manage tools and students is to assign different tasks to different groups of students and then switch tasks so everyone can try everything. When multiple groups or classrooms are gardening at the same location, they can alternate the times they are in the gardens so that they can share tools.
GENERAL PLANTING TOOLS
(These can be used with all types of gardens.)

Measuring tape: To mark the garden according to the plan

String and stakes: To mark the rows or the sections of the garden

Garden markers or labels: The students should make their own garden markers or labels using suggestions from the lessons such as craft sticks, wooden spoons, laminated note cards, vinyl blind slats, or other creative ideas. However, if you are pre-marking their garden spaces, you may want to use your own garden markers to help the youth and adults figure out where to plant things. Mark each end of a row or corner of a square foot garden space designated for a particular crop. Your markers can be replaced by the youths’ markers and you can use your markers again somewhere else or as back-ups.

Square foot garden templates: These can be made from poster boards using the templates found at the back of each of the lessons. You may want to make two or three of each template for small and medium-size plants. The students can put the template in the appropriate space in the garden, plant seeds in the hole spaces on the template, pick up the template and move it to another space, and start over again. Or, you can make a one or two of each template to place in the garden, sprinkle sand in the hole, move the template and repeat the process. The students can plant the seeds in the spaces marked with sand. Or, you can make several templates out of newspaper that you can leave in the garden as mulch. You will need to hold down the newspaper squares with twigs, garden markers or a thin layer of soil or mulch. The students plant their seeds in poked or cut holes and the newspaper is left to decompose.

Choose a method to plant seeds using the square foot garden templates: Most youth use their fingers. You can use craft sticks, spoons, dibbles, etc.

Seed shakers and pinch cups: See the Seed description in this Introduction.

Rulers or Dibbles: Dibbles are rulers made out of craft sticks. The instructions are found in Lesson 5B. Dibbles can be used to measure the depth of each hole and the distance between plants. They are also good digging tools to plant seeds in loose soil close to the surface.

Watering can: A can that has a spray head that can be removed so that you can use a spout offers the most versatility. Even if a hose is used in the outdoor garden, it is handy to also have at least one watering can that the students can use.

Seeds, transplants, sets, seed pieces: Purchase according to the garden plan and the Garden Plant Shopping List found at the end of this lesson.

Scissors: To cut open the seed packages, to cut the string or twine marking the rows, etc.

Sign(s): You may want to create a sign or signs to tell the public about your garden. Other signs may remind the young gardeners and their families about the rules for the garden. You may also want to consider posting “Do Not Spray” signs near your garden area to remind caretakers and neighbors that you want to protect your garden and gardeners from chemical sprays.
Hand washing stations: You will want to make sure the gardeners have a place to wash and dry their hands.

First Aid Kit: Cleaning supplies, band aids, first aid cream, sun screen, insect repellent, anti-itch cream, and tweezers are handy emergency supplies.

Safety clothing: This is what the students should be wearing to protect them from injury and sunburn. Shoes must cover the entire foot. The right hat can protect your face and neck. Sleeves, pant legs, or sun screen can also protect the skin. Garden gloves are optional. They can protect your hands and keep them cleaner, but they are sometimes awkward and cumbersome.

EARTHBOX OR CONTAINER TOOLS
1. One or two trowels

RAISED BED TOOLS
(Based on one 4’ x 8’ bed)
1. One or two hoes to work the soil before planting
2. One or two rakes to smooth out the soil before planting
3. Two to four trowels
4. Garden hose with a spray wand

TILLED GARDEN TOOLS
(Based on a 10’ x 20’ space)
1. Two to four hoes
2. Two rakes
3. Four trowels
4. Garden hose with a spray wand

It is a good habit to teach and practice tool maintenance after every use. Remove soil residue from trowels, hoe blades, and rakes before putting them away. It will keep the storage area clean and the tools will be ready for the next use. It is best to store tools in an indoor or enclosed location to extend their life and prevent damage such as rusting and weathered handles.

OUTDOOR PLANTING TIME
When can you start planting outdoors? Cool season plants, such as carrots, radishes, onions, peas, lettuce, spinach, and potatoes can be planted as soon as the soil thaws in the spring. Warm season crops can be planted once the threat of frost has passed.

Always be sure your garden soil is ready to be worked before you till or turn the soil over. Do not work the soil when it is too wet - that will result in large clods that are difficult to break apart and rake smooth. To determine if and when the soil is ready to be worked, take a handful and form it into a ball. If it forms a tight ball that doesn’t crumble with a little pressure, it is too wet to work. If it has moisture in it but crumbles apart under slight pressure, it can be tilled or turned over.

At planting time, have everything ready to go – tools, plants, volunteers, water, etc. Detailed instructions for guiding groups of students to plant are found in lessons 5A and 5B.
### Garden Plant Shopping List

**Instructions.** While looking at your garden plan, put an “X” next in the column to the right of all the crops that you will grow in your garden. In Columns 1 or 2, put an “X” to the right of the amount of seeds, sets, transplants or seed pieces according to whether you are planting in rows or square foot sections. In Column 3, figure out the portion of a 10 ft. row or the number of square foot sections you will be using for that particular crop. In Column 4, multiply either Column 1 or 2 times Column 3 and record the amount of seeds, sets, transplants, or seed pieces you will need. You will always need to purchase entire packets of seeds; but this will tell you how many packets to buy according to the total number of ounces needed.

<table>
<thead>
<tr>
<th>CROP</th>
<th>COLUMN 1 Seeds or plants for each 10 ft of row</th>
<th>COLUMN 2 Seeds or plants for 1 square foot section</th>
<th>COLUMN 3 Total number of 10 ft. rows or sq. ft. sections</th>
<th>COLUMN 4 Amount to purchase (COLUMN 1 or 2 x COLUMN 3)</th>
</tr>
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<tbody>
<tr>
<td>Bush beans</td>
<td>.5 ounce</td>
<td>.25 ounce</td>
<td></td>
<td></td>
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<tr>
<td>Pole beans</td>
<td>1 ounce</td>
<td>.5 ounce</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beets</td>
<td>½ packet</td>
<td>¼ packet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Broccoli</td>
<td>7 plants</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cabbage</td>
<td>7 plants</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carrots</td>
<td>1 packet</td>
<td>½ packet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cauliflower</td>
<td>7 plants</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sweet corn</td>
<td>1 small packet</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Cucumbers</td>
<td>½ packet</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Eggplant</td>
<td>7 plants</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kale</td>
<td>½ packet</td>
<td>¼ packet</td>
<td></td>
<td></td>
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<tr>
<td>Kohlrabi</td>
<td>½ packet</td>
<td>¼ packet</td>
<td></td>
<td></td>
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<tr>
<td>Leaf lettuce</td>
<td>1 packet</td>
<td>½ packet</td>
<td></td>
<td></td>
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<tr>
<td>Muskmelon (cantaloupe)</td>
<td>1 packet</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Okra</td>
<td>.25 ounce</td>
<td>.12 ounce</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Onion sets or plants</td>
<td>40</td>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peas</td>
<td>1.5 ounce</td>
<td>.75 ounce</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peppers</td>
<td>7 plants</td>
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<tr>
<td>Potatoes</td>
<td>10 pieces</td>
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<td></td>
<td></td>
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<tr>
<td>Sweet potatoes</td>
<td>10 plants</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Pumpkins</td>
<td>½ packet</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Radishes</td>
<td>1 packet</td>
<td>½ packet</td>
<td></td>
<td></td>
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<tr>
<td>Spinach</td>
<td>1 packet</td>
<td>½ packet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Summer squash (zucchini)</td>
<td>½ packet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Winter squash</td>
<td>½ packet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tomatoes</td>
<td>4 plants</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Watermelon</td>
<td>¼ packet</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Horticulturally speaking, plants produce “fruits” but nutritionally speaking, some of those fruits are called “vegetables.” Generally, if the fruit is sweet and you eat it as a dessert or side dish it is still called a fruit. If it is not so sweet and you can eat it as a main dish or side dish, it is called a vegetable. For example, tomatoes, cucumbers, peppers, and peas are the fruit of the plant, but we eat them as vegetables.**
Planting Our Healthy Garden

CONTENT OBJECTIVES
Plant a garden using “Our Healthy Garden Plan” from Lesson 4B and the most appropriate planting methods according to the type of garden and the plants that have been chosen for the garden. Experience personal health benefits of going outside, physical activities, water, and eating foods grown in gardens.

LIFE SKILL OBJECTIVES
Critical thinking, decision making, cooperation, communication, citizenship, leadership, healthy living

INDICATORS & EVALUATIONS
Students will successfully plant the garden according to the plans and planting methods from these lessons; Exercise in the garden, use water, and eat foods grown in a garden

SUBJECT STANDARDS
21st Century Skills: Employability skills, Health literacy
Science: Science as inquiry, Earth and space, Life science
Mathematics: Operations and algebraic thinking, Numbers and operations, Measurement and data, Geometry, Mathematical practices
Social Studies: Behavioral sciences, Geography
Literacy: Reading, Speaking, Listening, Viewing

CORE CONCEPTS AND SKILLS
LEARNER TYPES
Linguistic-words, Logical-mathematical, Spatial-visual, Bodily-kinesthetic, Interpersonal, Intrapersonal, Natural

MATERIALS
Our Healthy Garden Plan (from lesson 4B)
Samples of seeds, transplant or seedling, onion set, potato seed piece (optional)
Get Ready, Get Set, GROW! Worksheet (one per student, found at the end of the lesson)
Garden Challenge flash cards (found at the end of the lesson)
Paper clips
Pencils
Seed packets and plant labels (from the seeds or transplants that will be planted in your garden)
Garden tools (see Reflect and Apply sections)
Know Your Garden Tools (copy one per student, or do together on an interactive board or screen, found at the end of this lesson)
Garden Tools Crossword Puzzle (copy one per student, found at the end of this lesson)
Jumbo craft sticks (one per student)
Rulers (one per student)
Fine-tipped permanent marker or ink pen (one per student)
Square foot garden template (found at the end of this lesson or use the one from Lesson 4B)
Newspapers or poster board (see Reflect, Activity 4: Square-foot garden templates)
Scissors

Materials continued on the next page.
MATERIALS CONTINUED

- Garden Rules sign (see the Apply section)
- Garden Labels (from Lesson 4B)
- Container, raised bed, or tilled garden (The garden spaces should be built, filled with soil and ready to mark and plant.)
- Paper towels or rags to use near the garden
- Soap and water to wash hands
- Water (one bottle or cup per student, see Apply – Wrap Up)
- Fruit and or vegetable samples with dip (see Apply – Wrap Up)
- Garden Record (copy one per student or display one for the group, found at the end of this lesson)

TEACHER’S NOTE: Display a copy of Our Healthy Garden Plan from Lesson 4B and keep it posted where everyone can see it throughout this lesson. The responses to the questions in this section will vary and are intended to engage the students’ thinking without being right or wrong. Therefore there are no responses written after many of the questions.

If you are ready to plant the vegetables (or fruits) in Our Healthy Garden Plan, stand near your chairs and use hand motions to pretend you are planting a garden.

Give them a minute to start planting their pretend gardens. Then ask one side of the room to keep planting while the other side watches. Then reverse the process. Then have everyone sit down.

Did everyone plant their gardens the same way?
What different methods did you see?

What methods could we use to plant our garden and why?

What will we need to plant our garden?
We will need seeds, tools, markers, soil, water, sunshine, air, and each of us.

Raise your hand if you have planted a garden before.
For those of you who have planted a garden, have you always planted crops starting with seeds?
What did you use?
You may have used small plants called transplants, sets that look like the beginning of a vegetable such as onions, seed pieces that could be pieces cut from a potato, or seeds that come from the same kind of plant that you wanted to plant.

Are we planting container, raised bed or traditional in-the-ground tilled gardens?

What kind of tools do you think we will need to plant that kind of garden and why?

Pull on your ear lobes if you think we need to listen and learn in order to figure out a few more things before we jump into our gardens and start planting.
For those of you that are ready to plant, you can help the rest of us to make the best decisions for our plants, tools, and gardens.
**TEACHER’S NOTES:** You may want to have samples of seeds, sets, transplants, and seed pieces. Copy the Garden Challenge flash cards (found at the end of this lesson) so that you have three or four sets, depending on the number of students in the class (one set for every seven students). Cut them apart. Paper clip the sets of TEAM 1 flash cards. Repeat with the TEAM 2, and TEAM 3 cards. Copy the Get Set, Get Ready, GROW! worksheet, one per student. Students can take their completed worksheet home and teach their families how to plant different garden plants.

We just discovered that some plants can be started as seeds, but some plants will grow better in our garden if we start them in another way.

Why would it be a good idea to start some of our crops as small plants or transplants instead of direct seeding them in our garden?

A transplant is a small plant that is started from a seed and grown in a greenhouse until it is ready to be moved or transplanted into another container or the garden. By planting transplants or small plants called seedlings, the plants can get a few weeks head start and we can harvest them earlier than if they were planted by seed. Some crops don’t sprout well when direct seeded in the garden and do better when started as transplants.

Have you ever planted a small transplant or seedling?
What kind of plant did you plant?

Did you have to be careful when handling and planting the seedling and why?
Small transplants or seedlings are fragile. You have to be careful so that you don’t damage the root system or break the stem.

Besides seeds and transplants, what is another way in which crops are planted in the garden?

Some crops are started as parts of plants. For example, onions are planted as small onion bulbs that were started from seed the year before. They are called sets. Sometimes onions are planted as little plants and sold in bundles that were also started earlier.

Potatoes are planted from pieces of a cut-up potato called a seed piece. Each piece has a bud on it that will grow. (If possible, show a potato that is starting to sprout. Point out the eyes or sprouts.) A potato is actually a swollen, fat underground stem. Each one of those sprouts is like a bud that will grow into a shoot that grows up and above the ground. We plant potatoes from pieces of the potato with an “eye” or two on it. Each piece is planted in the garden about 4 inches deep.

How do you know how deep a seed should be planted?
The planting depth depends on the size of the seed. Typically, seeds are planted two to three times the diameter of the seed. Small seeds are planted shallow, larger seeds are planted deeper.

What could happen if the seed is planted too deep?
It won’t germinate.

What could happen if the seed is planted too shallow?
It might sprout then dry out and die. It might get washed away when it rains, blown away in the wind, or eaten by an animal.
GET READY, GET SET, GROW!

Distribute the Get Ready, Get Set, GROW! activity sheets. Go over the instructions and have the students complete it. They should be able to correctly match the crop with the way in which it is planted. You may want to display one large copy of the worksheet on the interactive board, flip chart, or some other way so that students can take turns drawing the lines between the categories as a way to check everyone’s answers.

GARDEN CHALLENGE MATCHING GAME

Divide the class into Teams 1, 2, and 3. The teacher is the moderator. Give Team 1 the flash cards with the pictures of the vegetable crops. Team 2 should have the flash cards with the different ways crops are planted – seeds, sets, transplants, and seed pieces. Team 3 should have the cards with the planting depths.

The game begins with Team 1 holding up one flash card for Teams 2 and 3 to see. Teams 2 and 3 quickly decide the match for that vegetable crop and hold up the appropriate flash card. Using the answer key below, the moderator could say “ding” if the answers are correct or “buzz” if it is incorrect. The students can work together to find the correct answers.

You can choose to keep score and play the game multiple times, giving the cards to different teams.

<table>
<thead>
<tr>
<th><strong>ANSWER KEY</strong></th>
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</thead>
<tbody>
<tr>
<td><strong>Crop</strong></td>
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<tr>
<td>Pumpkin</td>
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<tr>
<td>Onion</td>
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<tr>
<td>Tomato</td>
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<tr>
<td>Pepper</td>
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<tr>
<td>Lettuce</td>
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<td>Broccoli</td>
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<td>Cabbage</td>
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<td>Spinach</td>
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<tr>
<td>Carrots</td>
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<td>Beets</td>
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<tr>
<td>Snap bean</td>
</tr>
<tr>
<td>Corn</td>
</tr>
<tr>
<td>Pea</td>
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<tr>
<td>Potato</td>
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<tr>
<td>Cucumber</td>
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<tr>
<td>Radish</td>
</tr>
<tr>
<td>Squash</td>
</tr>
<tr>
<td>Sweet potato</td>
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</tbody>
</table>
**TEACHER’S NOTE:** In this section, you will need the students’ Our Healthy Garden Plan, the completed Get Ready, Get Set, Grow worksheets, seed packets or plant labels from the plants you will plant in your garden, Know Your Garden Tools (one copy for everyone to work on together), Garden Tools Crossword Puzzle (one copy per student), the tools you will use to plant your garden, craft sticks, rulers, permanent markers or ink pens, and scissors. Read Activity 4 in the Choosing Tools and Learning How to Use Them section and choose which type(s) of square foot garden template(s) you will need and be ready with the supplies. If possible, use the interactive board, a screen, or a large copy of the Get Ready, Get Set, Grow activity sheets so that everyone can work from the same sheet.

Distribute the seed packets or plant labels from the plants that you will be planting in your garden.

**CHOOSING THE BEST METHOD AND TIME FOR PLANTING CROPS**

We are ready to figure out how we are going to plant the crops we chose for Our Healthy Garden Plan.

Look at Our Healthy Garden Plan and the Get Ready, Get Set, Grow! activity sheet. Circle the crops that we will be planting on the activity sheet.

**Are there any other plants that we will be planting that aren’t on the activity sheet?**

**What are they?**

Add them to the list and decide how they should be planted. Refer to the seed packets or plant labels for more information.

Some of you have seed packets or plant labels from the plants we will be planting. Look at the packets and labels and tell us the answers for these questions. We will write them next to the crop on the Get Ready, Get Set, Grow activity sheet.

**What is the name of the crop?**

**When is the best time to plant it?**

**How deep should we plant it?**

**How far apart should we plant it?**

**How far apart should the rows be?**

**How many days until it should be ready to harvest and to be eaten?**

Pass the packets or plant labels around so the students can see the pictures and read the information while you continue to discuss the following questions.

**What vegetables are cool-season crops that can be planted as soon as the ground has thawed and harvested before the end of the school year and again in the summer for a late summer or early fall harvest?**

**What plants can we start inside now and transplant to the garden when it is warmer?**

**What tools will we need to grow these crops in the types of gardens we plan to plant?**

Have the students guess and then proceed to the next activity.
CHOOSING TOOLS AND LEARNING HOW TO USE THEM

Put the Know Your Garden Tools sheet on the interactive board, a screen, or make copies that everyone can see. Have the actual tools ready to show and use. Proceed with the following four activities.

ACTIVITY 1: TOOL IDENTIFICATION

Work through the Know Your Garden Tools sheet together, showing some of the actual tools, discussing the answers, and applying them to your garden space.

You may want to use the Garden Tools Crossword Puzzle as a take home follow-up activity. They can have their families help them finish the puzzle. Then have them bring the completed puzzle back and turn it in to see if they are ready to use the tools properly in the garden.

![Crossword Puzzle]

|--------|--------|----------|------------------|-------|-----------|------------|-----------------|
ACTIVITY 2: TOOL SAFETY

Do the following Tool Safety Game.

TOOL SAFETY GAME

I am going to show you some right ways and wrong ways to use and store our tools. If you think I’m showing you the right way, clap. If you think I’m showing you the wrong way, stomp your foot.

- Lift the hoe so that the blade is over your head like you are swinging a hatchet. **STOMP.**
  I have lifted the hoe too high. I am not chopping the soil. I am hoeing it. It doesn’t work very well this way. Also, you may hit someone who is nearby if you swing the hoe this high in the air.

- Lift the hoe so that it is about 1 foot off the ground and bring it down in a gliding motion through the surface of the soil. **CLAP.**
  This is the correct way to use the hoe to cut through crusty soil and remove weeds.

- Repeat the same motions with the rake.

- Lay the rake down, teeth up. **STOMP.**
  You should never set a rake or a hoe on the ground like this. What do you think would happen? The teeth of the rake or blade of the hoe may go into your foot and the handle could pop up and smack you in the face. *(You may want to carefully demonstrate how the handle pops up.)*

- Stand the rake and hoe, handles up, against a wall or hang them. **CLAP.**
  Rakes and hoes should be stood against a wall or in the shed or garage when they are not being used.

- Walk with the trowel blade up. **STOMP.**
  Always carry your tools such as this trowel with the sharp blade facing down.

- Run a short distance holding a hoe and a trowel. **STOMP.**
  Never run with tools in your hands.

- Pretend to wash dirt from the trowel, hoe, or shovel. **CLAP.**
  It is always a good idea to clean the soil off your tools before you put them away. This shows you are responsible for taking care of your tools.

- Pretend to fight with a student over a trowel or hoe. **STOMP.**
  Show respect by taking turns.
ACTIVITY 3: DIBBLES

Since Roman times, long before Christopher Columbus discovered America, people made dibbers or dibbles, which are pointed wooden sticks that helped them make the right sized hole for planting seeds. One person would use the dibble for making the holes and another person would follow and plant the seeds. We are going to make our own dibbles and use the same process to plant the seeds in our garden. We will use craft sticks, rulers, and permanent markers or ink pens to make our dibbles.

Distribute the supplies. You might want to display the illustration on this page in a place for everyone to see. You may want to make your own dibber along with the students.

Line your craft stick up with the zero inch mark at the start of your ruler. Find ¼ inch on your ruler and make a little line from ¼" on your ruler onto about a fourth of your craft stick. Do the same at ½", ¾", 1", 1½", 2", 3", 4", 5". Then move your rulers to the other side of the stick and do the same thing. In between your two lines, mark the measurements using the number and the inch symbol.

Write your name on the back of your new dibble and store it where you can find it when we are ready to plant our gardens.

Katie Jones
ACTIVITY 4: SQUARE-FOOT GARDENING TEMPLATES

If you are using the square foot gardening method, use the square foot garden templates found at the end of this lesson and have the students work in groups of three or four to make a full-size template for small plants and one for large plants. You can make them out of newspapers. If you do that, you can stake the templates in the garden using small sticks or your dibbles. Throw some soil over the top to keep them in place. You can make re-usable templates with poster board and laminate the poster board once the circles have been marked and the plant names have been added.

(The length of time required for this activity depends on types and sizes of gardens. You may want to start seeds indoors for late-summer or early-fall harvest crops. You can plant the seedlings or transplants in the garden once you have harvested the cool-season crops.)

TEACHER’S NOTES: Collect the Garden Tool Crossword Puzzle activity sheet and check for understanding. If you find that they aren’t familiar with the tools, you may have to do a review. This section could be much easier with the help of Extension Master Gardeners or members of your community who are familiar with gardening. Make sure that they have read over this section to know how to include all the students in the gardening process.

Choose the activities in this section that best match the type of garden and garden methods you will be using to plant your gardens. Regardless of the type of garden you will be planting, please be sure to do the Garden Rules and Wrap-Up activities.
GARDEN RULES

Establish the ground rules for the garden. You may want to write these on a re-usable poster board that can be creatively posted every time the class goes to the garden. Have the students repeat the three R’s – Respect, Responsibility, Readiness and give examples of how each of them applies to the garden.

RESPECT

Yourself – Wear shoes that cover your entire foot, clothes that protect your skin from the sun and from being too cold or too hot, and practice safety.

Your gifts – Share your energy, and use your skills and knowledge to help others.

Other people – Be a good listener, consider others’ ideas, share tools, say please and thank you, ask questions rather than assuming things, do not get into each other’s spaces, and practice safety.

Other people’s things – Do not touch or borrow things without asking, keep things clean and undamaged, and practice safety.

The environment – Take good care of the garden and the space around it and remind others to do the same.

RESPONSIBILITY

Be on time and stay where you are suppose to be.

Listen and follow instructions.

Use garden tools and supplies safely, clean them, and put them away correctly.

Share in the work and the fun of the garden. (Remember what happened in the Little Red Hen?)

READINESS

Be ready to listen, learn, have fun, work hard, share, and most of all grow healthy food!

Establish a “Gardeners Go” cue with a clap or noise to indicate that gardeners can start their tasks and a “Gardeners Stop” cue with two claps or a noise to indicate when gardeners should stop what they are doing and look at you for more directions. Have students practice going and stopping while they pretend to be hoeing or digging with trowels. Explain that this will make it easier to work with so many people in the garden, it will give everyone a chance to garden, and it will help to get the garden chores done in a limited amount of time.

CONTAINER GARDENS

You will need Our Healthy Garden Plans, garden markers from Lesson 4B, trowels, rulers, dibbles, seeds, transplants, watering can, extra soil and possibly other garden supplies and watering equipment according to the type of container gardens that you are working with and where they are located. Have the students help to place the supplies near the container and then have them sit or stand near the container as you proceed with the following steps.
1. Checking container placement
Do you think our container(s) are sitting in the best place to get the most sunlight?
Look at your light sources and have the students move the containers if needed.

2. Checking the soil
Most container gardens are filled with specially prepared soil.

**Why do you think we should not use soil dug from the ground in our containers?**
Although it may grow plants well outside, it becomes very packed in a container and the plant’s roots will not be able to get the air and water they need. Potting soils contain the right blend of materials to allow for good drainage while holding water in the soil for the plants. Some potting soil already contains fertilizer to help the plants grow. The white pieces in the mix are called perlite which is actually a volcanic glass that softens and expands when heated. It helps to prevent water loss and soil compaction so that the plants have a better chance to grow.

**Why do you think specially prepared soil for container gardens is lighter in weight than garden soil?**
That makes it easier to move the containers outdoors in the summer or to move them around indoors.

**Do you think we have enough soil in this container? Why or why not?**
If the plants are surrounded by the sides of the container, they won’t get enough light and air to grow. If the soil is right at the top of the container, it may overflow when you water it. The soil should be within 1 inch from the top edge of the container. We may need to add a little soil after watering because it will settle.

*Have the students check the soil level with their dibbles. If you need to add some soil, you should do it now.*

*Have the students take turns turning the soil or smoothing the soil with a trowel.*

*The students can feel the potting soil and look for the different ingredients in the soil mix. Have them describe what they feel and see. Compare it to the soil outdoors.*

*Using a watering can filled with warm water, have a few students lightly water the soil in the containers. (This step can be skipped if using self-watering containers such as EarthBoxes™.)*

**Why do you think we are watering the soil before we plant?**
Watering the soil before planting makes it ready for the seeds and plants. Watering now will settle the soil and we can add more soil if we need to. If we watered the soil for the first time after planting, the seeds may be washed out of position in the lightweight soil mix.

**Should we water the soil before we plant outdoor gardens?**
That is often not necessary because outdoor tilled gardens have some moisture present in the soil from rains or melted snow.
3. Marking your container for more than one crop

If you are planting more than one crop in a container garden, help the students to use the plans, rulers, and the edge of their dibbles to mark out the sections. The students can then put the garden labels in the sections or containers to identify what they will be planting.

4. Planting the seeds, sets, or transplants

a. Have the students hold up the right number of fingers as they number off as 1-dig, 2-plant, and 3-cover. After the students have numbered off, have the 1-dig students pretend to dig a hole with their dibbles, the 2-plant students pretend to plant a seed, and the 3-cover students pretend to cover the seed with soil.

b. Demonstrate how to dig a hole ¼" deep using a dibble. Then use the edge of the dibble like a ruler to measure 3" from the first hole and make another hole ½" deep. Have the students refer to the plans and seed packets or plant labels to help the 1-dig students use their dibbles to make the right size and depth of the holes and to measure the distance between seeds. All the 1-dig students should have an opportunity to dig and measure. You can also use the square-foot gardening template on some container gardens.

c. Demonstrate how to take a seed out of the seed packet (or a small bowl or cup) and plant it. Have the 2-plant students plant the seeds, sets, or transplants in the holes.

d. Using your dibble or your fingertips, demonstrate how to carefully cover a seed. Have the 3-cover students use their dibbles or fingertips to carefully cover the seeds, sets or transplants with soil.

5. Watering the seeds, sets, and transplants

Water the seeds according to the method that comes with the kit; or, one student can be delegated (per container) to gently water the seeds with a watering can.

6. Cleaning up

Have everyone help to clean off the trowels, wipe off the dibbles, and put them in the proper place for storing. Then have everyone wash their hands thoroughly.

RAISED BEDS AND TILLED OR TRADITIONAL GARDENS

You will need Our Healthy Garden Plan and garden markers from Lesson 4B, Garden Rules sign, hoes, trowels, square foot garden templates, dibbles, two balls of string, garden stakes (from a garden store; or, wooden spoons or large craft sticks), two or three tape measures, watering can, garden hose – according to the type and size of garden. The raised beds should be constructed and the soil should evenly fill the beds to within an inch from the top edge of the bed. The tilled gardens should be tilled, amended with compost and fertilizer, and ready to plant.

1. Moving out to the garden

Have the students bring their dibbles, garden gloves (optional), and at least one of the items they will be using to plant their gardens and go stand around one of the raised beds, or at one end of the tilled garden. Have the students put their supplies on the ground behind them and have all eyes on you.
What are the three basic garden rules that start with the letter “R”?
Respect, Responsibility, Readiness

What cues are we using to start and stop what you are doing in the garden?
Practice the cues.

2. Preparing the soil
Why should we hoe and rake our garden(s)?
Hoeing and raking loosens up the soil so that water can pass through the pore spaces in the soil to reach the seeds. Then the roots and the sprouts can grow through the soil. It will also make it easier to plant the seeds.

Demonstrate how to use the hoes and rakes to carefully work and level the soil. Have the students form lines to each use a hoe to work the soil, get back in line, and then use a rake to smooth out the soil. If you have more than one garden space, divide the students into groups to prepare each space. Limit each student’s time by counting to 10 in thousands. Start the hoeing and raking with the “Gardeners Go” and “Gardeners Stop” cues.

3. Marking the garden
Use Our Healthy Garden Plan to decide where and how to plant the garden. Remind students that in raised bed gardens, they will be working from the outside edges of the garden and not walking into the garden. Therefore they won’t have to make walkways in the raised bed gardens.

   a. If you are using the square foot gardening method throughout the raised bed, have the students lay down and stake (with their dibbles, extra craft sticks, or broken twigs) as many of the corresponding newspaper templates as they can in each section. Label the sections with the appropriate garden marker. You may want to write or circle the name of the crop you are planting right on the square foot templates.

   b. If you are using just a few re-usable square foot templates, use them as measuring devices. Have students stand along the edges of the garden to measure out each section using the templates and the corner edge of a hoe to make trenches designating each section. Place the garden markers so that everyone knows what to plant in each section. A tilled garden should have walkways between each section so you can easily work in each section.

   c. If you are planting rows in the tilled garden, you can have students make a Human Grid. Instructions follow in sections c1 through c3, It will keep everyone occupied and in place, especially when there are more than twenty students. It will also sharpen their math skills.

   c1. Ask four students to work in pairs to measure the long edges of the garden. Give each pair a tape measure. One student can hold the end of the tape measure while the other one stretches it across the long edge of the garden and locks it. Lay the tape measures down along the long edges or sides of the garden.

   Have two sets of students count off as 3′, 6′, 9′, 12′, 15′, 18′ (depending on the length of the garden). Then have them stand next to the garden at those markings on the tape measure. There should be two students standing across the garden from one another.
If your tilled garden has a center walkway, use a third measuring tape and your plan to determine where the walkway will go. Then have two students each take a stake to mark out the walkway. Then have those students each take a ball of string, wrap and tie one end of the string to the garden stakes, stretch it across the garden to mark the edges of the walkway. Wrap, cut, and tie the string on the stakes.

Any students who haven’t participated in these tasks will help with the rest of the marking tasks.

c2. Stand with the remaining students somewhere that everyone can see and hear. Show the garden plan and determine where each row or section of the garden will be. Starting at one end of the garden, determine where the first row or square foot section will go. Have the students standing nearest that measurement on both sides of the garden (for example, 3’) squat down and touch that measurement on the tape measure. Give a student a ball of string and two stakes and tell them to take it to one of the students pointing to the measurement. The student pointing to the measurement puts the stake securely into the ground. He or she may need help from the students standing nearby. The student with the string wraps and ties the string to the stake. Then she or he stretches it across the garden to the other student pointing to the measuring tape and repeats the same procedure. Take the scissors over to the students and have them cut the string before they tie it.

Have another student find the garden markers that match the crop to be planted in each row or section and stick it in the ground at the each end of the row or in a corner of a square foot garden section. This will tell the students what to plant in each row or section.

Have students take turns marking out the garden until all rows or sections are marked. Everyone can participate by helping one another find the right measurement, sticking in stakes, tying and cutting the string, finding and putting in the garden markers. Repeat this procedure to mark all the rows or sections. Remember to leave walkways around square foot gardening sections in tilled gardens, but not raised beds.

c3. If you are using newspaper square foot templates, have the students put them in the garden according to the plan and stake them with little sticks or craft sticks. If you are planting the same day, you may get by with staking just two corners of each template. If you are using poster board square foot templates, put them in the sections of the garden where they are to go according to the plan.

Have the students remain in place to start planting the garden.

4. Planting the garden
For raised bed gardens and tilled gardens using the square foot planting method:
Using the holes in the right-sized square foot templates, demonstrate how to use the dibble to make and measure a hole according to the planting instructions on the packet. Then carefully use your fingertips to plant one seed and cover it with soil. Show them how tiny the seeds can be and tell them that they can easily blow away so keep a hold of the seed packet and use fingertips to retrieve a few seeds out of the packet at a time.
Have students work in pairs to plant the seeds in all the holes of one or two square foot garden templates (according to the number of students and the size of the garden so that everyone has an opportunity to plant). One student can use their dibble to make the holes and the other can plant the seeds and carefully cover it with their fingertips. Then they can trade tasks. Use the “Gardeners Go” and the “Gardeners Stop” cues.

For rows in a tilled garden:

a. Hand hoes to the students standing on the sides that didn’t have an opportunity to mark the garden. Have another student read how deep to plant the seeds for that particular row. Have another student put their dibble right next to the string at the end of the row to measure how deep the furrow or shallow planting ditch should be. Then the student with the hoe can carefully put one corner edge of the hoe close to the dibble and next to the string to start the furrow by dragging the hoe half way across the garden. She or he should take the hoe to the student across the garden from him or her and that student can complete the furrow for the other half of the garden. In many cases, you may be stopping at each edge of the center walkway.

b. The two students standing on either side of the person making the furrow can work together to plant the seeds in the furrow on their half of the garden. Students can use their dibbles to make sure they plant the seeds at the right depth and that the seeds are planted the right distance apart.

c. Use the trowels to dig holes for the transplants. The measuring tapes will help the students determine the distance between the plants.

d. The students that weren’t standing along the side of the garden can help with the supplies and making sure that everyone is following the garden plan by planting the right seeds or transplants in the right places. They can also help the person planting by removing the transplant carefully from the cell pack or small container that it came in. If necessary, loosen the roots of the transplant.

5. Watering the garden

Make sure the tools are out of the garden before watering. You can leave the newspaper templates in the garden because they will decompose and prevent weeds from germinating. Water the entire garden area to make sure that everything is well watered. Use a hose with a water breaker or sprayer to thoroughly water the garden. Do not spray directly down on the garden and the seeds or it may wash away the seeds. Make it rain on the garden. Take turns watering sections of the garden.

You will need to water the garden weekly unless it rains an inch or more during the week or the ground is already too wet.

6. Cleaning up

Make sure the hoes, rakes, trowels and dibbles are scraped free of soil or wiped clean with paper towels or rags. Put them away according to tool safety rules. Have everyone wash their hands.
STARTING SEEDS INDOORS (optional)

At least four weeks before harvesting cool-season crops, you may want to start some of your warm-season crop seeds inside so that you can transplant them in your open garden spaces. Have each student make and plant their own pots. Make a few extra.

PAPER POTS

1. Wrap a 4 inch strip of newspaper around an empty frozen juice can or a water bottle with about 1½ inches hanging over the bottom of the can.

2. Fold the excess paper up around the bottom of the can or bottle to form the bottom of the pot. Press it down on the tabletop or pinch around the bottom edges to secure the paper pot and remove the can or bottle.

3. With one hand under the bottom of the pot, completely fill the pots with potting soil.

4. In the center of the pot, use a dibble to make a hole the right depth of soil for the seed you are planting.

5. Plant the seed and cover it with soil.

6. Place the pots close together on a flat or tray.

7. Water gently with a small watering can, or a squirt water bottle.

8. To encourage faster growth, cover the tray with a large, clear plastic bag, such as a dry cleaner’s bag.

9. Set it in a location that receives bright, indirect light.

10. Keep the soil moist.

11. Remove the plastic bag immediately after the seeds germinate or start to grow.

12. When the plants are 2 to 3 inches tall, use a trowel and plant the entire newspaper pot into your garden. Make sure the top edge of the newspaper is covered with soil so that it won’t act like a wick and pull the water away from the soil around the plant’s roots. The newspaper will decompose.

EGGSHELL PLANTERS

1. Tap the smallest end of an egg on a hard surface and peel it away. Pour the egg contents into a clean container. *(If you are using clean hands, surfaces and equipment, you can cook the eggs into scrambled eggs – eggs are packed with complete proteins to nourish and energize our bodies. You can use an electric skillet, surface spray, add a little water to make fluffy eggs, and add salt and pepper – or salsa and cheese.)*

2. You may want to wash out the eggshell planter and then put it back into the egg carton or tray.

3. Using a plastic teaspoon, carefully fill the eggshell with soil. Lightly pat the soil down and add more to fill the egg. Add a teaspoon or two of water to the soil.

4. Follow instructions 4 through 12 from Paper Pots above. When you transplant the pots outside, gently crush the eggshell before planting it in the ground. The eggshell will provide plant nutrients to the soil.
You may also choose to use peat pots purchased at local garden stores. You can plant the entire peat pot in the garden.

If you use small paper cups, gently take the plant out of the container or peel off the sides and bottom of the cup before you transplant the plant into the garden.

WRAP-UP

After the tools have been put away and everyone has washed their hands, it is time to re-energize with a healthy snack and record what you planted.

HEALTHY SNACK

The healthy snack should be water and fruits or vegetables and dip. As the students eat and relax from the gardening experience, ask the following question and share possible answers. Conclude that they will discover more about the answers as their garden grows.

Are we eating or drinking anything that we grew or used in our garden?

We are drinking water like we sprayed on our garden. (Discuss any of the snacks that you may have planted. If there aren’t any snacks that were planted from your garden, talk about whether the snacks grew in a garden, berry patch, vineyard, or an orchard.)

Why do seeds, sets, seed pieces, transplants, and growing plants need water?

They need water to start or continue to grow. While the plants are growing, they will need water to grow and produce the leaves, fruit and other edible parts of the plants.

Why do you need water?

We need water just as much as plants need water. Our bodies need water to stay alive and to help all parts of our bodies to work like they should. Our bodies are made up mostly of water, so it is important to keep our water levels up. Water helps us clean our bodies inside and out.

Look at the fruits and vegetables you are eating. How can you tell they have water in them?

They are firm and not shriveled; the skin looks shiny and not wrinkly. You can see and or taste the juice.

How do you know that you aren’t getting enough water?

You may have dry skin and hair, poor skin complexion, dull eyes, dry throat, get sick more often, don’t go to the bathroom regularly, you might pass-out, you don’t feel good, or you can’t think clearly.

We get vitamins and minerals that help our bodies to be healthy from eating vegetables and fruit. How do the vegetables and fruits get the vitamins and minerals that they pass on to us when we eat them?

The plant takes up nutrients from the soil. The plant uses water, carbon dioxide from the air, and sunshine or light to makes its own nutrients or plant food that becomes the food we eat, such as carrot roots, lettuce leaves, tomatoes, and strawberries.

Raise your hand if you are trying a new fruit or vegetable today. What is it and what do you like about it?
GARDEN RECORD

Remember, if you plant something new or harvest anything from your garden, please record it on your Garden Record page. If you haven’t started this page, please copy and use the Garden Record page found at the end of this lesson.
Get Ready, Get Set, GROW!

**Name**

**Instructions:**
Draw a line from the plant to how it is usually started in the garden.

Put a star by the plants that you would like to grow sometime.

- **pumpkins**
- **onions**
- **peas**
- **sweet potatoes**
- **cabbage**
- **squash**
- **lettuce**
- **carrots**
- **tomatoes**
- **beans**
- **broccoli**
- **peppers**
- **potatoes**
- **cucumbers**
- **corn**
- **radishes**

**transplants**

**seeds**

**sets**

**seed pieces**
GARDEN CHALLENGE

TEAM 1: potatoes, TEAM 1: tomatoes, TEAM 1: peas, TEAM 1: onions, TEAM 1: carrots, TEAM 1: lettuce.
GARDEN CHALLENGE

TEAM 1 pumpkin

TEAM 1 pepper

TEAM 1 broccoli

TEAM 1 cabbage

TEAM 1 spinach

TEAM 1 beets
GARDEN CHALLENGE

TEAM 1  green beans | TEAM 1  corn

TEAM 1  cucumber | TEAM 1  radish

TEAM 1  squash | TEAM 1  sweet potatoes
GARDEN CHALLENGE

**Team 2**
- seed pieces
- transplants

**Team 2**
- sets
- seeds
GARDEN CHALLENGE

TEAM 3 shallow

TEAM 3 medium

TEAM 3 not seed transplant, set, seed piece

TEAM 3 deep

(¼" deep)

(½" to 1" deep)
**Know Your Tools**

<table>
<thead>
<tr>
<th>Tools</th>
<th>Garden Tool Use</th>
<th>Tilled Garden</th>
<th>Raised Bed Garden</th>
<th>Container Garden</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gloves</td>
<td>Gloves protect hands and keep them clean.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rake</td>
<td>The short, stiff teeth on a garden rake are strong so that it can break up clods and make the soil smooth for seeds and plants.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fork</td>
<td>A garden fork loosens the soil and turns it over. It also can be used to harvest underground crops such as carrots and potatoes.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hose</td>
<td>A hose is used to take water from the water spigot to the garden. Several hoses can be connected so that the garden can be watered a fairly long distance from its source.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trowel</td>
<td>A trowel looks like a small shovel.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shovel</td>
<td>A shovel is used to dig larger holes for planting larger things in the garden and landscape, like trees and shrubs. It also can be used to turn soil over. Gardeners use shovels to add things, such as compost and manure, to their garden.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tiller</td>
<td>A tiller is a machine that a gardener walks behind to turn over the soil.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Instructions:**
The right tools make gardening much easier and more fun. Here are some of the tools commonly used for gardening.

Put an “X” in the box under container garden, raised bed garden, and tilled garden if you think the tool is needed for that type of garden.
## KNOW YOUR GARDEN

### CONTINUED

<table>
<thead>
<tr>
<th>Tools</th>
<th>Garden Tool Use</th>
<th>Tilled Garden</th>
<th>Raised Bed Garden</th>
<th>Container Garden</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tape measure</strong></td>
<td>A tape measure that is long enough to stretch the length of the garden is important to have when it comes to determining where crops should be planted and giving them enough room to grow.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Labels</strong></td>
<td>Garden labels or markers are important to identify the crops and know where everything is planted. Using the tape measure and your garden plan, the labels can be put in just before the garden is planted.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Watering can</strong></td>
<td>A watering can holds one to two gallons of water and has a spout that allows you to gently water plants by hand. It is ideal for small gardens, but not very efficient for large, tilled gardens.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Water breaker</strong></td>
<td>A water breaker is typically attached to the end of a hose to &quot;break up&quot; the flow of water into fine spray or forceful spray. On the &quot;shower&quot; setting, it wets the soil gently without washing the soil away from the roots or damaging the plants.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>String</strong></td>
<td>A string is used to stretch from a stake on one side of the garden to one on the other side. It is used as a guide to keep seeded and transplanted crops in a tidy straight row.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mulch</strong></td>
<td>Mulch comes in many different forms – grass clippings, straw, leaves, newspaper, black plastic, etc. It is laid over the soil to help conserve soil moisture. It also blocks light from reaching the soil so it prevents weed seeds from sprouting and growing.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Read the handout, “Know Your Garden Tools” to find the answers to the crossword puzzle.

Name

ACROSS

4. A tool used to smooth the soil to make a fine seed bed
5. Tools used to mark where crops are planted
6. A tool that fits on the end of a hose to gently water garden plants (two words)
7. A tool used to lightly cultivate the soil and remove weeds from the garden
10. A motorized tool used to prepare the garden soil for planting
12. A tool that is stretched down the row to assist with planting row crops
13. A tool used to accurately determine plant and row spacing (two words)

DOWN

1. A tool used to plant small plants in the garden
2. A tool used to water plants by hand (two words)
3. A tool used to cover the soil to reduce weed growth and conserve soil moisture
8. A tool used to move water from the source to the garden
9. A tool used to turn the soil over or dig underground crops, such as carrots and potatoes
11. A tool used to dig and add things to the garden, such as compost
1. Make a copy of this page.
2. Cut around the squares and cut out the circles.
3. Place one template on one corner of a poster board.
   Draw around the outside of the square and around the circles.
4. Use the same template four times to make a square foot gardening guide.
5. Cut around the square foot and cut out the circles.
6. Write the names of the crops in the center of the guide.
7. It is best to laminate these guides to keep them in good shape from year to year.
## Garden Record

**YEAR:** ________________________

**YOUR NAME | CLASS | OR GROUP:** ________________________________________

<table>
<thead>
<tr>
<th>NAME OF CROP</th>
<th>AMOUNT PLANTED AND DATE</th>
<th>AMOUNT HARVESTED AND DATE</th>
<th>TOTAL AMOUNT HARVESTED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example: radishes</td>
<td>10 feet of row or 2 square feet or one 2.5 gram packet on April 15</td>
<td>32 radishes on May 20</td>
<td>59 radishes</td>
</tr>
<tr>
<td>Example: lettuce</td>
<td>16 feet of row or 4 square feet or one 1 gram packet on April 15</td>
<td>2 pounds on May 16</td>
<td>3 pounds</td>
</tr>
</tbody>
</table>

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### AMOUNT PLANTED AND DATE
Feet of row, square feet, number of plants, or number of seed packages

### AMOUNT HARVESTED AND DATE

### TOTAL AMOUNT HARVESTED