

# GRADE 5 | Garden



## SCOPE & SEQUENCE



### GRADE 5 STANDARDS


At the end of Grade 5, students will be able to:



- Demonstrate knowledge of genetic traits in plants.
- Demonstrate knowledge of geographic and geologic factors that shape soil.
- Demonstrate knowledge of how to make soil for seed germination and garden beds.
- Demonstrate knowledge of the cultural origin of food.
- Demonstrate knowledge of how plants have migrated around the world.
- Demonstrate knowledge of seed to plate process.
- Demonstrate understanding of how food systems are connected to social, economic, political, and environmental systems.

## GRADE 5 | FALL


Each activity described below should be designed to last approximately 45 minutes.


Lesson # & Title	Topic	Content Learning Objective(s)	Suggested Lesson Activity	Life Skills Learning Objective(s)	Connections to Kitchen Lessons	Possible Extensions	Academic Standard Connections	Health Standard Connections
<b>START THE YEAR</b> <i>Schoolwide Garden Work Party with Families/Local Community</i>								
<b>1.</b> Welcome to the Garden!	Personal and Community Life Skills <b>(PLS and CLS)</b>		Engage students by having them share their names. Have them explore teamwork through an age-appropriate teambuilding exercise. Explain behavior expectations by reviewing garden agreements established in <b>Grade 4 Lesson #1: Welcome to the Garden!</b> Review Personal and Community Life Skills. Then put students into teams of 3. Have them elaborate on teamwork by giving each team a word, such as “shiny” or “fuzzy.” Have them collect objects that share that particular attribute, and then bring their collections back to the other groups. Have the other groups try to guess their word. Hand out journals that students will use to reflect at the end of each lesson.	<b>PLS.1-6</b> <b>CLS.5</b> Students participate in the development of agreed upon protocols and behaviors for the garden and kitchen environments.	Make connections between garden agreements and kitchen agreements.	<b>Classroom:</b> Make connections between garden agreements and classroom agreements.	<b>CCSS.ELA-LITERACY.SL.4.1</b> Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others’ ideas and expressing their own clearly.	

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<b>2.</b> Mapping Influences on What is Grown	Weather and Seasons, Climate and Geography <b>(WSCG)</b>	<b>WSCG.5.2</b> Map the geographic, cultural, and historical influences that shape what is grown (maritime climate, altitude, soil composition, climate) in your bioregion.	Bring in a food that is truly unique to your region, such as steamed okra, fried green tomatoes, or the like. Explore with students through a group brainstorm. Then have them elaborate, recording independently in their journals the geographic, cultural, and historical influences represented in that food. Brainstorm together and have students independently map all of the influences that shape what is grown in your bioregion. 	<b>CLS.4</b> Students appreciate and are respectful of differences and diversity in their communities.	In this lesson, call upon examples of crops grown in the garden that reflect the geography, culture, and history of your region.	<b>Classroom:</b> Research any historical relevance of the crop in other parts of the world using books such as <i>How Carrots Won the Trojan War</i> by Rebecca Rupp.  <b>Community:</b> Interview members of your community on their memories and experiences of the dish.	<b>Social Studies:</b> Geography.  <b>Social Studies:</b> Cultural Traditions.	<b>National Health Education Standard 2:</b> Students will analyze the influence of family, peers, culture, media, technology, and other factors on health behaviors.

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<b>3.</b> Saving Bean Seeds 	Plants (P)	<b>P.5.1</b> Understand how to identify and cultivate genetic traits in plants.	Engage students by discussing the benefits of saving seeds. Have students explore dry beans planted last spring. Have each student look for about 4 of the very healthiest, best looking bean pods to save for next year. Explain how to harvest and shell beans together and place into a bowl. Use coin envelopes or have students make origami seed envelopes such as the ones found on <a href="#">Our Permaculture Life</a> . Have them elaborate, labeling with bean type and relevant planting information. Have students present the seeds to the new Grade 4 class to plant in spring. 	<b>CLS.3</b> Students understand and apply principles of fairness, equity, and democracy in the garden and kitchen environments.	Use the rest of the beans in <b>Kitchen Lesson #10: Cooking Beans</b> and <b>Kitchen Lesson #11: Beans Galore Salad</b> .	<b>Classroom:</b> Create a class card to give to the Grade 4 students along with the beans telling them what they have to look forward to in garden class this year.	<b>CCSS.ELA-LITERACY.W.4.2</b> Write informative/explanatory texts to examine a topic and convey ideas and information clearly.  <b>Social Studies:</b> Citizenship, Cultural Traditions	


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4. Seed Movers	Weather and Seasons, Climate and Geography <b>(WSCG)</b>	<b>WSCG.5.1</b> Describe the effect of human migration on seeds and plants.	Engage students by reading <i>Miss Rumphius</i> by Barbara Cooney to students. Explore real seeds and the structures that help them travel on the wind, on water, on animal's fur, etc. Explain the ways seeds travel. Then focus on human migration, and discuss examples of seeds being transported by humans for agriculture.	<b>PLS.4</b> Students are active and engaged learners who show up on time, prepared to learn and participate, and able to manage their time.	In the garden, enjoy okra or black eyed peas together, and discuss how <u>these seeds and others</u> were originally brought to the Americas by enslaved Africans.	<b>Classroom:</b> In contrast to the fictional text of <i>Miss Rumphius</i> , write an informational text about seeds traveling.  <b>Community:</b> Research restrictions around traveling with seeds, fruits, or vegetables and develop understanding of positive and negative impacts.	<b>Social Studies:</b> Geography.  <b>Social Studies:</b> Cultural Traditions.  <b>NGSS Science and Engineering Practice:</b> Constructing Explanations.	

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5. Contributing to the Community	Garden Planning and Maintenance (GPM)	<b>GPM.5.4</b> Identify a need in the school or community and create a garden plan to address it.	Engage students in a discussion of how to contribute to the school community. Explore ideas by brainstorming people from the school (for example, the food service director, secretary, or custodian) you could invite to class to interview about how they could use the garden to address a school need (for example by growing something for the salad bar, or planting flowers for the classrooms). For each person students mention, brainstorm questions you could ask them. Have students elaborate on their learning, practicing asking their interview questions. Then help students invite those people in for <b>Lesson #6: Contributing to the School Community.</b> 	<b>PLS.4</b> Students are active and engaged learners who show up on time, prepared to learn and participate, and able to manage their time.	In this lesson, consider with students how they also might use their cooking skills to address a need in the school or community.	<b>Classroom:</b> Create and conduct a written survey of members of the school community to gather ideas of how the garden could best meet their needs.	<b>CCSS.ELA-LITERACY.SL.5.1.A</b> Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.	<b>National Health Education Standard 1:</b> Students will comprehend concepts related to health promotion and disease prevention to enhance health.

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6. Contributing to the School Community	Garden Planning and Maintenance (GPM)	<b>GPM.5.4</b> Identify a need in the school or community and create a garden plan to address it.	Have students interview members of the school community to get ideas about how they could use their garden to contribute to the school. Following the interviews, lead students in a discussion to choose a project they would like to pursue. 	<b>PLS.3</b> Students cultivate honest and responsible behaviors that contribute to the learning of the community.	Work with the food service director to identify a dish, such as <b>Pasta Primavera</b> , <b><i>There's a Chef in My Family!</i></b> , that students could make and contribute to a school lunch.	<b>Classroom:</b> Practice letter writing skills, writing thank you letters to the people you interviewed.	<b>CCSS.ELA-LITERACY.SL.5.1.A</b> Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.	<b>National Health Education Standard 1:</b> Students will comprehend concepts related to health promotion and disease prevention to enhance health.  <b>National Health Education Standard 8:</b> Students will demonstrate the ability to advocate for personal, family, and community health.

## GRADE 5 | WINTER


Each activity described below should be designed to last approximately 45 minutes.


Lesson # & Title	Topic	Content Learning Objective(s)	Suggested Lesson Activity	Life Skills Learning Objective(s)	Connections to Kitchen Lessons	Possible Extensions	Academic Standard Connections	Health Standard Connections
7. Rain Gauges	Garden and Food Systems (GFS)	<b>GFS.5.2</b> Understand the relationship between weather patterns and watering in garden.	Explore the garden for wetter and drier areas. Explain how to make rain gauges, such as those found on the <a href="#">Royal Meteorological Society</a> website. Have students make gauges, and place them in the garden. Check gauges with students regularly and record rainfall. Explain how to judge whether or not plants need water based on rainfall and soil moisture. Have students elaborate by checking gauges and soil, and making arguments based on evidence for the need to water. Demonstrate a proper watering technique to minimize soil erosion, and then have students water plants. Discuss the importance of water in the human diet, and compare our need for hydration to the hydration needs of plants. 	<b>CLS.2</b> Students cooperate and communicate well with each other.	In the kitchen, when you use water (as an ingredient, or to cook something such as in <b>Kitchen Lesson #8: Miso Soup</b> ), discuss where the water came from. Review the connection between our need for water and plant needs for water.	<b>Classroom:</b> Read <i>Water Dance</i> by Thomas Locker.  <b>Community:</b> Collect rain gauge data at student homes, and compare accumulations at multiple sites.	<b>NGSS Science and Engineering Practice:</b> Developing and Using Models.  <b>CCSS.MATH.CONTENT.4.MD.A.1</b> Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table.	



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8. Splash Boards	Soil (S)	<b>GFS.3.3</b> Describe a food web.	Engage students by having them make splash boards to measure soil erosion patterns. Explain how to create <u>splash boards</u> . Have students elaborate, making splash boards and using them to measure soil erosion patterns from water in various locations around the garden. Have them continue to elaborate and share out their findings.	<b>PLS.6</b> Students actively seek creative and resourceful solutions.	As you enjoy a dish featuring fresh produce such as in <b>Kitchen Lesson #9: Layered Black Bean Chili Dip</b> , acknowledge the part erosion played in creating the soil that grew the food you are eating.	<b>Community:</b> Compare patterns found in the garden to larger scale patterns for rain flow around the city or state.	<b>NGSS Science and Engineering Practice:</b> Engaging in Argument from Evidence.  <b>Social Studies:</b> Geography	


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9. Impacts of Human Activity on Soil	Soil (S)	<b>S.5.1</b> Describe the various activities that create soil.	Explore ways human activity (mulching, cover cropping, leaving ground bare, trampling plants, watering, etc.) impacts erosion. Have teams elaborate, choosing activities to test. Then, using <u>splash boards</u> they created in <b>Lesson #8: Splash Boards</b> , conduct experiments to test impacts of such activities.	<b>CLS.1</b> Students demonstrate problem solving and resolve conflict as a team.	In this lesson, discuss the connection between healthy soil, healthy food, and healthy bodies.	<b>Classroom:</b> Write a narrative story with the “Magic Space” introduced in <b>Grade 3 Lesson #9: Mapping Magic Spaces</b> as the setting and the animal inhabitants as the characters.  <b>Community:</b> Imagine a “Magic Space” in your community and what connections may exist there between the humans, the land, and the animals.	<b>NGSS Science and Engineering Practice:</b> Developing and Using Models.  <b>Social Studies:</b> Geography.	

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<b>10.</b> Garden Caretaker Station Rotation	Garden and Food Systems <b>(GFS)</b>  Garden Tools and Equipment <b>(GTE)</b>	<b>GFS.5.1</b> Describe the roles beneficial insects and pests play in the garden.  <b>GTE.5.1-4</b> Garden Tools and Equipment	Garden Caretakers Station Rotation: Explain relevant tool safety, and then divide students into teams to rotate through the following stations: <ul style="list-style-type: none"> <li>• Removing snails or other pests by hand</li> <li>• Removing dead flowers from plants that attract beneficial insects in order to promote new growth</li> <li>• Mulching, terracing a slope, making a sign about where to walk, or doing something else to decrease erosion</li> </ul>	<b>PLS.3</b> Students cultivate honest and responsible behaviors that contribute to the learning of the community.	As you frame the student roles as garden caretakers, make the connection between the work they are doing in the garden, the food they are growing, and the dishes they are preparing in the kitchen.	<b>Community:</b> Offer to lead a workday for a community garden to help with similar tasks.		
<b>11.</b> Farm to Table Stories	Garden and Food Systems <b>(GFS)</b>	<b>GFS.5.3</b> Demonstrate ability to identify and map a food system; include a historical or cultural perspective.	Have students map the food system by tracing a food item from the farm to the table. Divide the class into teams of about 6 students. Assign each team a different food item to explore the process from production to consumption (for example corn to tortillas and soy beans to miso soup). Then have each team sort themselves into an order to tell a story and elaborate by sharing out and discussing.  	<b>CLS.2</b> Students cooperate and communicate well with each other.	When making a dish featuring produce grown by students, such as in <b>Kitchen Lesson #11: Beans Galore Salad</b> , have students tell and illustrate a similar story to the ones described in this suggested activity, showing the process from garden to bean salad.	<b>Community:</b> Interview community members who work in different steps of the journey for a particular dish local to your region.	<b>CCSS.ELA-LITERACY.W.5.3.C</b> Use a variety of transitional words, phrases, and clauses to manage the sequence of events.  <b>NGSS Science and Engineering Practice:</b> Developing and Using Models.	<b>National Health Education Standard 2:</b> Students will analyze the influence of family, peers, culture, media, technology, and other factors on health behaviors.

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<b>12.</b> Mapping a Dish	Garden and Food Systems <b>(GFS)</b>	<b>GFS.5.3</b> Demonstrate ability to identify and map a food system; include a historical or cultural perspective.	Assign each student a dish, or have them select a dish that interests them. Have them explore, researching the history and culture represented by the dish and the plants that must be grown to prepare it. Then have them elaborate, creating a visual map in their journals representing the journey of that dish from farm to table. 	<b>CLS.4</b> Students appreciate and are respectful of differences and diversity in their communities.	In the kitchen, help students prepare some of the dishes they've researched.	<b>Community:</b> Interview community members on their personal history with a dish that represents their culture.	<b>Social Studies:</b> Cultural Traditions.  <b>NGSS Science and Engineering Practice:</b> Developing and Using Models.	<b>National Health Education Standard 2:</b> Students will analyze the influence of family, peers, culture, media, technology, and other factors on health behaviors.

## GRADE 5 | SPRING

Each activity described below should be designed to last approximately 45 minutes.

Lesson # & Title	Topic	Content Learning Objective(s)	Suggested Lesson Activity	Life Skills Learning Objective(s)	Connections to Kitchen Lessons	Possible Extensions	Academic Standard Connections	Health Standard Connections
<b>13.</b> Sharing a Dish	Garden and Food Systems (GFS)	<b>GFS.5.3</b> Demonstrate ability to identify and map a food system; include a historical or cultural perspective.	Have students elaborate on their learning from <b>Lesson #12: Mapping a Dish</b> by hosting a poster presentation or share out in which students share about the dishes they researched. 	<b>CLS.4</b> Students appreciate and are respectful of differences and diversity in their communities.	In the kitchen, help students prepare some of the dishes they've researched.	<b>Community:</b> Invite experts from the community to be guest speakers for the poster presentation or share out.	<b>Social Studies:</b> Cultural Traditions.	<b>National Health Education Standard 2:</b> Students will analyze the influence of family, peers, culture, media, technology, and other factors on health behaviors.
<b>14.</b> Planting for Ka-Bam Kabobs	Garden Tools and Equipment (GTE)	<b>GTE.5.1-4</b> Garden Tools and Equipment	Review tool safety. Explain how and why we read seed packets. Then have students elaborate, reading seed packets and planting onions, bell peppers, and any other produce you would like to include in <b>Grade 6 Kitchen Lesson #4: Ka-Bam Kabobs</b> .	<b>PLS.1</b> Students are self-aware and show respect for their own needs, the needs of others, and the environment. They practice safe and conscientious behaviors in the garden and kitchen environments.	In <b>Grade 6 Kitchen Lesson #4: Ka-Bam Kabobs</b> , students will prepare kabobs using the produce planted here.	<b>Classroom:</b> Write a narrative modeled after <i>The Carrot Seed</i> by Ruth Krauss, with the students as the main characters and using dialogue to move the story line.  <b>Community:</b> Compare the varieties of onions and bell peppers available in the grocery store to the ones you planted in your garden.	<b>NGSS Science and Engineering Practice:</b> Planning and Carrying Out Investigations.	<b>National Health Education Standard 6:</b> Students will demonstrate the ability to use goal-setting skills to enhance health.

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<b>15.</b> Garden Calculations	Garden Planning and Maintenance <b>(GPM)</b>	<b>GPM.5.1</b> Calculate volumes of soil, compost, and/or amendments for garden beds.	Explore different sized garden beds with students, looking for which they think holds the most soil. Discuss why this is important. Explain to students how to calculate the area of a garden bed, and then the volume of soil and compost needed to fill them. Then have them elaborate, using these calculations to fill and prepare the bed.	<b>CLS.1</b> Students demonstrate problem solving and resolve conflict as a team.	In <b>Lesson #16: Planting Seeds for Saving</b> , students will plant popcorn into this bed. Then, in <b>Grade 6 Lesson #4: Saving Seeds with Popcorn</b> , students will prepare popcorn to flavor and enjoy using Culinary Flavor concepts learned in their kitchen lessons.	<b>Community:</b> Offer calculation services to members of the community, requesting the length, width, and depth of their bed.	<b>CCSS.MATH. CONTENT.5.MD.C.5</b> Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.  <b>NGSS Science and Engineering Practice:</b> Using Mathematics and Computational Thinking.	
<b>16.</b> Planting Seeds for Saving	Garden Tools and Equipment <b>(GTE)</b>  Weather, Seasons, Climate and Geography <b>(WSCG)</b>	<b>GTE.5.1-4.</b> Garden Tools and Equipment  <b>WSCG.5.1</b> Describe the effect of human migration on seeds and plants.	Review safe tool use, and demonstrate the new skill of using a wheelbarrow to move compost from the compost pile to a garden bed. Then have students work together to elaborate on their learning by preparing a bed for planting, using their calculations from <b>Lesson #15: Garden Calculations</b> . If all of your garden beds are full, have students clear and add compost to prepare. Then have students plant popcorn (or another crop that can be used to save seeds) for <b>Grade 6 Lesson #4: Saving Seeds with Popcorn</b> . Discuss the connection between human migration and seed migration.	<b>PLS.1</b> Students are self-aware and show respect for their own needs, the needs of others, and the environment. They practice safe and conscientious behaviors in the garden and kitchen environments.	In <b>Grade 6 Lesson #4: Saving Seeds with Popcorn</b> , students will prepare popcorn to flavor and enjoy using Culinary Flavor concepts learned in their kitchen lessons.	<b>Cafeteria:</b> Find out if there is something you can grow for the cafeteria.	<b>CCSS.MATH. CONTENT.5.MD.C.5</b> Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.	<b>National Health Education Standard 8:</b> Students will demonstrate the ability to advocate for personal, family, and community health.

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17. Discovering Drip Irrigation	Garden Planning and Maintenance (GPM)	<b>GPM.5.3</b> Demonstrate ability to create watering system for plants.	Engage students in a conversation about water conservation and why it is important. Give teams of 4 students different components from a drip system, such as an on/off valve, a piece of mainline tubing, a hole punch, a few fittings, a piece of emitter tubing, and an end cap. Have students explore each component and guess what its function is based on its structure. As students share out, explain the accurate function. Have students elaborate, working together to build a small sample system using the pieces they have. Then go out to the garden beds and have each team work together with a small set of predetermined materials to lay out a simple drip system (i.e. for one plant, or for one bed). Once you have approved their system, provide them with a hole punch for tubing and a tubing cutter, and let them work together to assemble and install the system.	<b>PLS.6</b> Students actively seek creative and resourceful solutions.  <b>CLS.1</b> Students demonstrate problem solving and resolve conflict as a team.	In this lesson, as you frame the student roles as irrigators, make the connection between the work they are doing in the garden, the food growing, and the dishes they are preparing in the kitchen. Also make the connection between plant needs for hydration and our own needs for hydration.	<b>Community:</b> Create a “How to” Guide for setting up a drip system including a list of tools and supplies (with specific measurements when necessary) and directions clearly written in sequence.	<b>NGSS Science and Engineering Practice:</b> Developing and Using Models.  <b>CCSS.MATH.CONTENT.5.MD.A.1</b> Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.	

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18. Garden Caretaker Station Rotation	Garden Planning and Maintenance (GPM)	<b>GPM.5.2</b> Demonstrate understanding of when to water by observing plants and soil for signs of no or low moisture.	<b>Garden Care Station Rotation:</b> Review safe tool use, and demonstrate how to use a hose with a nozzle to water. Then have students elaborate on their garden learning by rotating students through the following stations: <ul style="list-style-type: none"> <li>• Watering: Check all drip irrigation to make sure it is working; use the hose and nozzle to water a designated area.</li> <li>• Compost: Flip the compost.</li> <li>• Weeding: Clear a designated area or bed of weeds.</li> </ul>	<b>PLS.2</b> Students are able to express empathy and caring for themselves, others, and the environment.	In this lesson, as you frame the student roles as garden caretakers, make the connection between the work they are doing in the garden, the food growing, and the dishes they are preparing in the kitchen.	<b>Community:</b> Volunteer at a local community garden to weed, water, and tend to the compost.		