

b. Paper Towel Gardening 45 minutes

Objective

Create planting templates divided into representative fractional amounts to ensure that the plants have enough room to grow.



Supplies

1 roll of paper towels (each towel about 1 foot square)
For each pair of students: 2 markers; 2 paper towels; 2 copies of the *Garden Planting Chart* (page 27) in which you have filled in the *Recommended planting date* column for your area; 1 bottle of washable glue; 1 packet of carrot seeds
For each student: School glue; 1 paper towel sheet; 1 *Garden Planting Chart*; 1 marker; 1 packet of vegetable seeds from the six crops that will be planted in the school garden this season; 1 clipboard; 1 sheet of paper; 1 pen or pencil

Ask your students how a roll of paper towels could help them make sure that their plants will have just the right amount of space.

Tell them that they will learn how to use this tool today when they begin planning their garden.

Divide the class into partners. Give each team two markers, two paper towels, a copy of the *Garden Planting Chart*, a bottle of washable glue, and a packet of carrot seeds.

Lead the class through these steps:

- ★ *Hold up a paper towel.* How many plants do you think would be able to grow in a garden that is only as large as this little space? *It depends on the type of plant. Different plants need different amounts of space. For example, broccoli grows larger than carrots do, so it needs much more space.*
- ★ In this first paper towel garden, we will grow carrots. At the top of the paper towel, write in small letters your name and the word *carrots*.
- ★ On your planting chart, find the column labeled *Number of seeds or plants per paper towel*. Look down that column to the row labeled *Carrots*. There the chart will tell you how many carrot seeds can be planted in an area the size of a paper towel.
- ★ What did you find? *16 seeds per paper towel*
- ★ We will use the paper towels to make seed templates. The templates will help us space out the seeds to give the plants the room they need.



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23

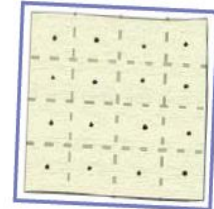
Week 3

Week 3

www.jmgkids.us/LGEG

24

- ★ On your paper towel, we'll evenly space 16 carrot seeds and then glue them on. How can we spread out the seeds on the paper towel so that each seed gets the same amount of space?
- ★ How can we divide the paper towel into sixteenths? *Fold it in half four times.*
- ★ In the center of each square, place a tiny dot of glue.
- ★ Carefully place a carrot seed on each glue dot.
- ★ Set out the towel to dry.
- ★ After the glue dries, we can lay the sheets on the ground in the garden, cover them with a thin layer of soil (see planting depth on chart), and water the seeds. In time, the glue will dissolve, the paper towel will compost in the soil, and the carrot seeds will grow in the perfect amount of space!



As an alternative to covering the paper towels with a layer of soil, your class could plant their paper towel seed templates following these steps:

1. Lay all of the paper towels in the proper places on the soil surface in the garden.
 2. Wet the paper towels with a quick spray of water to weigh the towels and prevent them from blowing around.
 3. Use a pencil to poke each seed down to the correct depth.
- Once all of the seeds are planted, remove the seedless paper towels and throw them into a compost pile.

Point out the other vegetables on the planting chart and reiterate that some plants need more space than do others. If the students were creating a paper towel garden for spinach, they would divide the paper into ninths. And if they were planting Swiss chard, they would divide it into fourths.

Tell the class that this was a practice session for making the seed templates for the school garden.

Add that in the next few days, they may take their paper-towel carrot gardens home to start a mini garden in the ground or in a large pot of soil near their home.

See page 20 for sources of planting recommendations for your area. They will include a range of dates for when carrot seeds can be planted locally. Have the students write those dates on their paper towels.



School paper towel gardens

Before creating your class's paper-towel garden templates, determine which plants will grow in your area during this season and the best dates to plant them. For tips on finding this information, see page 20.

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Choose six crops from this list of 12 nutrient-dense vegetables:

Bell peppers*	Carrots	Potatoes**	Sugar snap peas
Bok choy	Cauliflower*	Spinach	Swiss chard
Broccoli*	Leaf lettuce	Squash	Tomatoes*

Seeds or transplants?

When starting a garden, how do you decide whether to use seeds or transplants?

Some crops are likely to grow better if planted by transplant. Those are noted in the list above and on the *Garden Planting Chart*.

*Use transplants

**One special crop that your class might plant is potatoes, which grow from pieces of "seed potatoes."

Provide glue, markers, seeds, paper towels, and planting charts. Then assign each student a vegetable from the list above to create a paper towel garden. Instruct them to use the chart to answer these questions:

- ★ Will your plant be planted with seeds or transplants?
- ★ How deep should I plant the seeds?
- ★ How deep should I plant the transplants?
- ★ How many seeds or plants should I plant per paper towel?

Give the following directions:

1. On your paper towel, write:

- ★ Your name
- ★ The plant's name
- ★ How deep to plant the seeds
- ★ When we should plant those seeds or transplants in our area
- ★ The fraction of the paper-towel space that each plant will need (such as 1/8 for sugar snap peas, 1/4 for Swiss chard, 1/1 for bell peppers, and 4/1 for squash)



2. If needed, fold your paper towels to create the right number of sections for your seed.

3. Glue one seed in the center of each section.

4. If your vegetable is not planted by seed—broccoli, cauliflower, potatoes, bell peppers, or tomatoes—instead of gluing, write a capital letter (T for tomato, B for broccoli) in the center of your towel. This designates how much space we will save in the garden for your crop.

5. If you will plant transplants, you may help your partner glue seeds to the paper towel.



It is a good idea to lay the templates in a single layer to dry overnight. If you stack them, they may become glued together.

After the glue has hardened, store the seed templates in a cool, dry place until they are planted.

Once the garden area has been prepared for planting, take the students outside with their clipboards, paper, pencils, and seeded paper towels.

Guide the students to the area in the garden where they should place each type of plant, and have them carefully place their towels accordingly.

Ask the students to each sketch a map of the garden and label where each type of plant will go.

Remind the students that the crops may have different planting dates, and ask them which of the plants will be planted first.

carrots	swiss chard	lettuce	spinach			
carrots	swiss chard	lettuce	spinach	cauliflower	broccoli	broccoli
carrots	swiss chard	lettuce	spinach	cauliflower	broccoli	broccoli

Close the lesson by pointing out that they are helping make sure their garden will be a success. By spacing the plantings correctly and planning the right dates to plant the seeds/transplants, they will be doing an excellent job as gardeners in providing for the needs of each of their plants.

Each week, the garden journal will include a section for the students to grade a new fresh food sample. If your class rates one this week, tell the students that they will again be scientists: They will carefully observe and evaluate a sample of a fresh vegetable.

First they will wash their hands using the *Soap, Scrub, 20, and Dry* rule.

Then they will look at, smell, feel, listen to, and taste the sample.

After they carefully consider each sense independently, they will give the sample a grade of A, B, C, D, or F based on each sense.

These fresh food exposures are optional. For ideas about how others could help provide samples of fresh produce for your class, see *Food Tastings and Recipe Demos with Your Kids* on pages 132–137.



Garden Journal 3

At the end of the lesson, give the students 5 to 10 minutes to write in their garden journals.

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Garden Planting Chart



Crop	ReCommended planting date	Number of days until emerging	Number of Seeds or plants per paper towel	Planting depth	Number of days to harvest
Beans (bush)		5-10	9	1 inch	45-60
Beans (pole)		5-10	8	2 inches	50-70
Beets		7-10	9	½ inch	55-70
Bell peppers		Transplant	1	Transplant	110-120
Bok choy		3-10	4	¼ inch	45-50
Broccoli		Transplant	1	Transplant	60-80
Brussels sprouts		5-10	1	¼ inch	120-150
Cabbage		5-10	1	¼ inch	60-120
Carrots		12-18	16	¼ inch	70-80
Cauliflower		Transplant	1	Transplant	60-100
Collards		5-10	4	½ inch	45-80
Cucumbers		6-10	2	1 inch	50-70
Garlic		5-10	16 cloves	1 inch	100-200
Kohlrabi		6-9	1	½ inch	50-75
Lettuce (head)		5-8	4	½ inch	45-90
Lettuce (leaf)		6-8	4	¼ inch	45-60
Mustard greens		3-8	4	½ inch	30-50
Onions		10-14	16	1 inch	80-120
Potatoes		14-28	1 seed potato piece	4 inches	70-90
Radishes		3-6	16	½ inch	25-40
Spinach		7-12	9	½ inch	40-60
Squash		4-6	1 seed per 4 squares	1 inch	45-90
Sugar snap peas		10-12	8	1 inch	60-100
Swiss chard		7-10	4	1 inch	45-80
Tomatoes		Transplant	1	Transplant	60-80
Turnip greens		4-8	4	½ inch	30-60
Turnips		4-8	9	½ inch	30-60

See page 20 for sources of planting date recommendations for your area.

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