



Science



Math

# DIY SEED TAPE

## Grade Level

3-6

## Length of Lesson

30 minutes

## Objective

By the end of this lesson, students will have a better understanding of the process of seed germination and the role of math in real-world gardening, farming, and other situations.

## Materials Needed

- Rulers or tape measures
- Radish, lettuce, or other garden vegetable seeds
- 1-ply toilet paper
- Spray bottles filled with water

## Standards

### NGSS

2-LS2-1; 3-LS1-1; 3-LS3;  
3-LS4; 5-LS2-1

### Common Core Math

CCSS.Math.Content.3.M  
D.C.5-7; 4.MD.A.2-3;  
6.EE.A.4

## Lesson Summary

This lesson is designed to give students a hands-on activity that shows how seeds germinate. Students will determine the correct spacing to plant their seeds and then calculate how many seeds they could plant in a specific area. Students should have a basic understanding of plant life cycles and what the term “germination” means.

## Suggested Sequence of Events:

1. Read *We Are the Gardeners* by Joanna Gaines to capture student interest.
2. Read through AITC Seasons Ag Mag to learn about how the seasons affect plant growth.
3. Complete the activity following the procedures:
  - Hand out the student worksheet and read the background Information section as a class.
  - Hand out materials to students.
  - Ask students to measure and cut a two foot long piece of toilet paper.
  - Students should lay the toilet paper on their workspace and lightly spray it with water. The paper should be damp but not sopping wet.
  - Next, students should lay their rulers next to the paper and determine the correct spacing for their chosen seeds. Using the ruler as their guide, students should carefully lay out their seeds in the center of the paper.
  - Then, have students fold the paper in half lengthwise to cover the seeds, and then fold in half once again. If the paper is too dry, have students lightly spray it again and then press the layers of paper together.
  - Leave undisturbed until dry. The seeds should now be adhered to the paper. Students can dig a furrow, unroll their seed tape, and then cover with soil. The seeds should now be planted at the proper spacing.
6. Whole class discussion and reflection of activity.

# TEACHER RESOURCES

## Background Information:

Quick-growing crops are best for this activity, particularly if you are having students plant these in a school garden. Radishes, turnips, lettuce, a variety of salad greens, and more can all be planted in early spring and be ready to harvest before the school year ends.

Root crops, such as radishes, can also be planted in groups of 3-4 seeds. The spacing between each grouping should be increased to allow the roots to spread out and have room to grow.

## Extension Ideas:

- Students could experiment with spacings of seeds and grouped seeds to calculate the ideal spacing. AITC's "Throw and Grow" activity could be modified for this purpose as well.
- Have students collect data on the growth of their plants by making observations every day or every other day, and using measuring devices to measure their plant growth.
- Have students explain what seed germination is and what is necessary for seeds to germinate!
- Have students figure out the spacing of seed placement in gardens that are various shapes.
- Watch a time lapse videos of seeds germinating and plants growing. There are many of these available online. [Here](https://youtu.be/e2zVeUPxBU4) is the link to a particularly good one for radishes: <https://youtu.be/e2zVeUPxBU4> and <https://youtu.be/bfi3iipTQo0>
- Ask your students if there are ways to use less space but still plant the same amount of seeds. Then introduce "Square Foot Gardening," a popular garden spacing method.
  - There are many books and resources related to this technique. There are many ways this could be adapted for a variety of real-world math exercises with calculating area, planting density, and more.
- Here are some additional suggestions for excellent books on gardening for your students: *Up in the Garden and Down in the Dirt* by Kate Messner, *What Will Grow* by Jennifer Ward, *Plants Can't Sit Still* by Rebecca E Hirsch, *A Seed is Sleepy* by Dianna Hutts Aston and Sylvia Long, *From Seed to Plant* by Gail Gibbons.
- Go to [agintheclassroom.org](http://agintheclassroom.org) to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!



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## STUDENT WORKSHEET

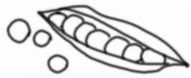
### Background Information

All plants require space around them to grow! The space around them will vary depending on the type of plant; some need more room than others. This is extremely important for gardeners and farmers to consider when it's time to plant their seeds!

If the seeds are too crowded, the plants will not have room to grow. If the seeds are too far apart, the plants will not grow big enough to block weed seeds from germinating and out-competing them!

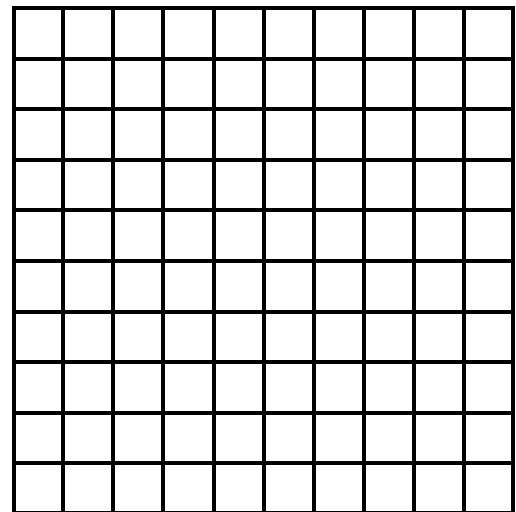


Farmers and gardeners use a wide variety of tools and technologies to make sure they are planting at the proper seed density. Making a "seed tape" is one way to make sure seeds are properly spaced.



Today, you are going to "plant your own garden" and determine the spacing required between your seeds for the size of your garden!

- My garden is 10 foot by 10 foot.
- I'm planting \_\_\_\_\_ seeds!
- According to the planting instructions, my seeds should be planted \_\_\_\_\_ inches apart in the same row.
- There also needs to be \_\_\_\_\_ inches between each row!



- .....
1. How many rows will fit in this garden?
  2. How many seeds can I plant in each row?
  3. How many total seeds can I plant?
  4. What is the total length in feet of the rows in my garden?
  5. What is the total length in inches of the rows in my garden?
  6. What is the total area of my garden in square feet?



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## SEEDING INSTRUCTIONS

It's time to create your very own Seed Tape! Follow these instructions to create and plant your Seed Tape.



Today we are seeding \_\_\_\_\_ seeds onto our Seed Tape.

1. Cut a piece of toilet paper, or seed tape, to the proper length your teacher instructed.
2. Lay the piece of toilet paper across your workspace and use your ruler or tape measure to measure the length.

My seed tape is \_\_\_\_\_ feet long. This is the same as \_\_\_\_\_ inches long!  
 Based on the planting instructions, how many seeds should fit on your seed tape? Show your calculations in this box!



3. Using your spray bottle, lightly spray water onto the seed tape to moisten it. It should **not** be soaking wet!
4. Lay your ruler or tape measure on the edge of the seed tape. Carefully lay the seeds at the proper spacing along the middle of the strip of seed tape.
5. Then, fold the seed tape in half lengthwise and lightly press down. The seeds should stick to the toilet paper somewhat. If your paper is too dry, mist it again with the water and press again. Fold the seed tape in half lengthwise one more time and lightly press down.
6. Let your seed tape fully dry before you move it. Once it's dry, you can carefully fold it or roll it up until you are ready to plant!
7. On planting day, dig a furrow in your garden space. Your furrow needs to be the same length as your seed tape!
8. Place the seed tape in the furrow and cover it with soil.
9. Water daily to keep the soil moist until your seeds germinate. Make sure to water regularly and pull out any pesky weeds that pop up to give your young plants their best chance to grow into tasty vegetables!— remember, your seeds need room to grow!