

Grade K

## TINKER VEGGIES

### Georgia Performance Standards Covered:

- **MCCK.G.5** – Model shapes in the world by building shapes from components (e.g. sticks and clay balls) and drawing shapes.
- **MCCK.G.4** – Analyze and compare 2-D and 3-D shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g. number of sides and vertices/”corners”) and other attributes (such as having sides of equal length)
- **MCCK.G.3** – Identify shapes as 2-D (lying in a plane, flat) or 3-D (solid).
- **MCCK.G.2** – Correctly name shapes regardless of their orientation or overall size.

### Essential Questions:

What shapes are the school garden vegetables?

What shapes can you make with the veggies?

### Objectives:

- Reinforce recognition and differentiation of shapes using garden produce
- Provide students the opportunity to experiment modeling shapes themselves
- Encourage healthy snacking habits by increasing familiarity with vegetables in a hands-on activity

### Key Words & Terms:

Model

Sphere

Cone

Cube

Circle

Square

Rectangle

Triangle

### Abstract:

For once your students will be encouraged to put their toys in their mouths! In this lesson garden veggies serve double duty as shape building units and fun snacks.

### Materials:

- Skewer pieces and/or toothpicks – about 15 per student
- Wire or string (optional) – 2 or 3 foot long pieces per student
- Variety of vegetables/fruits for tinkering, recommended – 15 pieces per student:

- Cherry tomatoes/ brussel sprouts/ pearl onions/ shelled peas/ grapes to represent vertices (& as examples of spheres)
- Variety of vegetables/fruits for demonstrating, recommended – 2 of each:
  - Beets/ turnips for circles and sphere, form to cubes and squares
  - Zucchini/cucumber with ends cut off for circles and cylinders
  - Carrots/ pears for triangles, pyramids and cones
  - Eggplant and melon are good for carving any 3-D shape
  - Lettuce and dark green leaves can be used to cut out 2-D shapes
- Knives/ mandolin (for teacher use only)
- Plates – 1 per student
- Trays or Tupperware – 1 per group

Procedure:

*Review and Demo*

1. In the garden, challenge students to look around the garden and identify all the 2-D (flat) shapes they see. Prompt by asking what shape is ...
  - The garden bed border?
  - The spout of the watering can?
  - The spout of the watering hose?
  - The head of the hand shovels (or other garden tools)?
2. After identifying some of the more obvious 2-D shapes in the man-made objects, introduce the whole demonstration vegetables/ fruits. Have students identify the 3-D (solid) shape that corresponds to the whole veggie/ fruit (or the carved shape in the case of eggplant & watermelon). Also prompt students to identify the 3-D shape of the vegetables currently growing on the garden plants.
3. Cut a middle slice out of each whole vegetable (/carved vegetable) in front of the students to represent the 2-D shapes that relate to the 3-D shapes. Ask them to name the slice, then the whole.
  - Example – After students identify a carrot as a cone, cut a long slice out of the middle to show a triangle. Hold up each to clearly illustrate the difference between 2-D and 3-D shapes.
  - Be sure to have examples of 1) sphere/ cylinder & circle slice, 2) cube/ rectangular prism & square slice, 3) cone/ pyramid & triangle slice, 4) cylinder/ rectangular prism & rectangle slice, as a minimum.
4. Use the whole and slice pairs to compare & contrast their 3-D and 2-D shapes by characteristics such as vertices/ corners, number of sides, etc. This will help further cement the differentiation between 2-D and 3-D.
  - Example with cucumber (cylinder with middle rectangle slice):
    - How many corners does the cucumber have? (0)

- How many corners does the cucumber slice have? (4)
  - How many “sides” (faces) does the cucumber have? (3)
  - How many sides does the cucumber slice have? (4)
  - Repeat with the other 3 solid-flat pairs
5. Now use the same criteria to differentiate among the 2-D shape slices.
    - Be sure to compare number of same-length sides, as well.
  6. Compare the whole/carved veggie 3-D shapes to each other using the following:
    - Number of sides/ faces
    - Shape of the sides/ faces
    - Number of corners/ vertices

### *Tinker Time*

With the review of the characteristics of different shapes, students should now be ready to reconstruct all of the shapes, 2-D and 3-D, already discussed.

7. Divide students into groups of 3-5. Place toothpicks and the “vertices” vegetables in the center of each group, and pass each student their own plate.
  - Go ahead and let them taste their vertices vegetables! Just make sure there’s enough left for building...
8. Have each student construct the 2-D shapes individually (square, rectangle, triangle, circle). You may need to demonstrate the first shape construction.
  - Note: The circle won’t be perfect... you can provide wire or string to connect in circle form to the building veggie, or have them make a star-like shape with one veggie at the center and various toothpicks stemming out into a circle.
9. Now have the students work together in their groups to build the following 3-D shapes, either using their already constructed 2-D shapes or starting from scratch:
  - Cube
  - Rectangular prism
  - Pyramid (either triangular or rectangular base)
  - Sphere-like model
10. Finally, set them free to tinker creatively and snack healthfully!
  - Be sure to compost your toothpicks and produce scraps!