

## Designing a Pizza Garden

**Grade Level:** 7th

**Season:** Spring

**Larger IGS Unit:** Gardens; Math

**Essential Question:** How can we use math skills in everyday life? How can we design a garden to efficiently grow food for the school?

**Objective:** Students will utilize the principles of arcs, tangents, circumference, radius, and circular area to design a "Pizza Garden." Students will then plant the garden with the appropriate ingredients for pizza. This is the real-life application of the math principles, and helps students see how moving from equations to real life presents challenges, and at the same time how important it is to know the equations to make the application work.

**Materials:**

Long string/rope  
Wooden stakes  
Trowels  
Rakes  
Shovels  
Watering cans  
Basil plants  
Tomato plants  
Oregano plants  
Wheat seeds/starts  
Pepper plants  
Onion plants

**Introduction:**

Review math about circles - area, circumference, pi  
Introduce ideas of arcs and tangents as a way to divide circles, an 8<sup>th</sup> grade concept they haven't studied before, which prepares them for the math they'll do next year. Describe the size of the circle we will be dividing into sections for the pizza garden, and ask class how many "slices" we'll need.

**Activity:**

Go outside and lay out the garden, using wooden stakes and string as "arcs and tangents." Ask students to stand in a circle and plot out the garden together. Based on the ingredients, students must decide how much space/how many slices each ingredient requires.

Back in the classroom, students may use graph paper to plot out the garden and create a garden design. These will be used as their plans for the following class.

The following class, students plant the garden, according to their plans.

**Wrap up/ Assessment:**

An overall assessment piece is the students' garden plan. Each student hands in a circular garden plan, labeled with the location of pizza ingredients.

Students write about how math can be applied in daily life. Students may also complete a worksheet based on the concepts of arcs, tangents, radius and circumference.

**Extensions:**

- Harvest from the garden (fall)
- Make sauce from the ingredients (fall)
- Make pizza and freeze it (fall). Cafeteria directors may be able to use it in the school lunch.
- After harvesting and eating the harvest, go back outside, clean up the garden, and plant a cover crop for the spring so it can all happen again next year (late fall/early winter).