

MATH FOR THE GARDEN

The garden provides many options for providing hands-on learning in math. Two math concepts that work well in the garden are (1) measuring and (2) using area and perimeter to map the garden.

Activity #1: Measuring

Objective: Students will use different tools to measure different elements of the garden and create data charts and graphs to illustrate data.

Activity: Students will use rulers, yardsticks, their bodies and other measuring tools to measure elements in the garden

Grades: K-3

Materials:

- Whatever tools you would like them to use for measuring—rulers, yardsticks, measuring tapes, string, etc.
- Paper and pencil to record measurements

Location: Outside

Lesson: Anything and everything in the garden can be measured. Below are some ideas for measurement. Measuring in the garden is a great way to introduce metric measurement as well.

1. Distances in, around and to the garden—using their strides and/or measuring tapes. You can also combine both—have them measure distances with strides as a nonstandard unit of measurement, than they can measure using a measuring tape to get the distance in a standard unit.
2. Height of plants, fences, planters—measure and chart the growth of plants over time—be sure to mark plant with a stick so that students measure the same plant(s) every time. It is best to measure plant growth in centimeters because it is a more workable and illustrative measurement unit for small amounts of growth.
3. Length of fruits and vegetables--Measure and compare lengths of multiple vegetables from the same plant—zucchini, lettuce leaves, corn ears, pea and bean pods.
4. Circumference—faces of flowers such as sunflowers or cosmos, around vegetables such as tomatoes or zucchini, around plant stalks and fence poles
5. Optional: Have students turn their recorded data into a bar graph or data chart.

Activity #2: Using Area and Perimeter to Map the Garden

Objective: Students will use math to determine the area and perimeter of planting areas in the garden.

Activity: Students will develop a scale map of a garden planting area that can be used to develop a planting plan for the garden

Grades: 4-8

Materials:

- Measuring tape
- Paper and pencil for recording measurements
- Graph paper for drawing map

Location: Outside in the garden and inside the classroom.

Lesson: Gardeners use maps of their garden beds to plan what types of plants and how many plants can be planted in a bed each year. Different plants have different growth habits so different space needs. A well-planned garden provides enough room for each plant to grow well. For this activity, rectangular raised planting beds will be the easiest to map. If you do not have those, you may create a planting bed for the purposes of mapping by using stakes and string in soil or tape on a blacktop to outline an area you want mapped. For greater challenge, assign or create a planting bed that is not a rectangle and include a lesson on finding the perimeter and area of different shapes.

1. Using measuring tape, have students measure around the outside designated planting area and record their measurements. Teachers: please record your own measurement and have all students compare their measurements to yours to be sure they are accurate and understand the concept.
2. In the classroom, have students use their measurements to calculate area and perimeter of bed
3. Using their measurements, have students create a scale map of the planting bed on graph paper by translating the standard unit of measurement used to measure in the garden (feet, inches, or centimeters) into a unit of measurement on the graph paper (i.e., four squares on the graph paper equals one foot or twelve centimeters).
4. Optional: Once the maps have been created, have students use the planting guides to select the plants they want to plant in their bed, determine how much space each plant would need and develop a planting plan that lays out the plants they have selected in their box with sufficient space.