

Flower Power

Part 1: Introduction – Whole Class

Your class has been asked to help plan a flower garden for your school using a flower called **Hydrangeas**. Hydrangeas are beautiful flowers that grow in a variety of colors, like blue, pink and purple.

These flowers are important in Japanese and Korean culture, which is why they are often seen in gardens at homes, parks, and temples. In many gardens, people will plant different colors of Hydrangeas to represent different meanings.

In this assessment, you will use your understanding of how the environment can affect flower traits to plan to grow specific colors of Hydrangeas in your school garden.



First, think about what you've already learned about plants and animals and the environment during class and discuss the following questions together. *There is space for you to take notes below each question if you'd like, but this is optional.*

Think of a time when an environment changed.

1. What happened to the plants or animals when their environment changed? Describe or draw some examples.

2. How did changes in the environment affect the traits of the plants or animals there?

Part 2: Collecting Initial Data About Different Colors of Hydrangeas – Group Work

Work with your group during this section of the assessment but record your ideas on your own paper.

Gardeners across your town have different colored hydrangeas in their gardens, so they each collect data about the soil for you.

pH is a measurement people use to determine what plants will grow in the soil. The gardeners in your town use a test kit to measure the pH of the soil where their hydrangeas are growing (like the one in the picture to the right).

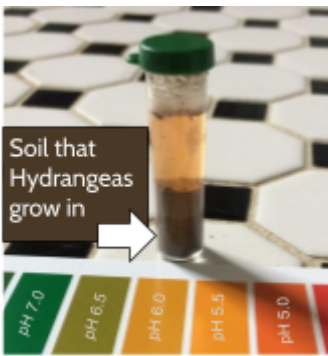


Photo by Barb Howe (CC BY 2.0)

- Review the data about each person’s garden below:

Person Who Owns the Garden	Mr. Jones’s Garden	Ms. Lee’s Garden	Mrs. Garcia’s Garden	Mr. Yamamoto’s Garden
Color of Hydrangea Flowers in the Garden	Blue	Lavender	Purple	Pink
Soil pH	4	5	6	7

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- a. What relationship do you notice between the **soil pH** (number) and the **color** of the hydrangea flowers?

- b. Describe at least two observations from the data that help support the relationship you just described.

One thing I noticed is

Another thing I noticed is

Now that you have investigated what affects the color of hydrangeas, use your understanding to design a garden with specific colored hydrangea flowers.

- Remember that different colored hydrangeas can represent different things in Japanese and Korean culture. Review the meanings of the different colored hydrangeas and circle the colors your group would want to have in a garden.

	Blue Hydrangeas 	Lavender Hydrangeas 	Purple Hydrangeas 	Pink Hydrangeas 
Meanings of Different Colors	Apology and seeking forgiveness	Understanding and respect	Admiration and gratitude	Love and affection

- For your group’s garden, you can buy soil with different pH levels. Plan your group’s garden design in the boxes below. Then describe how you can test if your garden design is successful.

Goal of this Investigation: What color(s) do you want the hydrangea flowers to be in your garden design?	
Your Garden Design: What would you change in your garden to try to get these color flowers? Check box(s) to the right.	Variables: ☐ Amount of sunlight ☐ Soil pH ☐ Amount of soil ☐ Amount of water
What would you control (keep the same) in your garden design? Check box(s) to the right.	Variables: ☐ Amount of sunlight ☐ Soil pH ☐ Amount of soil ☐ Amount of water
Describe your experiment. What would you do to test whether your garden design works? Use details when you describe each step. Optional sentence starters: <i>First, I would...</i> <i>Then, I would...</i> <i>Finally, I would...</i>	

How would you know if what you changed in your garden design worked?	If _____, then _____
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Part 3: Plan for Hydrangea Colors in a School Garden – Individual Work

The school is accepting ideas for which color hydrangea flowers to grow in the school garden and plans for how to grow them. Now that you have worked together as a group, you will use what you have learned to show your own thinking.

4. Fill out the boxes below to identify the color(s) of hydrangea flowers you want and use data to explain your plan for growing those colored flowers in the school garden.

What color(s) do you want the hydrangea flowers to be in the garden?	_____ _____
Why do you want hydrangea flowers to be this color(s)?	_____ _____
What would you need to do in your garden to grow these color hydrangea flowers? Explain exactly what you would do and why.	To grow these color flowers, I would need to _____ _____ because _____ _____
How did you know what to do? Support your explanation with data from page 2 about flower color and soil pH in other people's gardens.	I knew what to do in my garden because the data on Page 2 showed that _____ _____ _____ _____