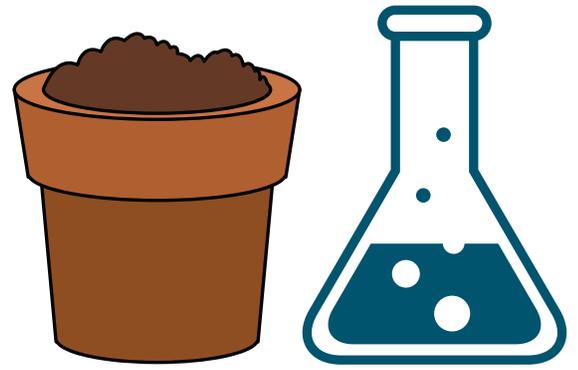


# Activity 4: Soil pH

## Is soil acidic or basic?

In this activity, you will conduct a pH test on a soil sample. You can collect a sample of soil from a nearby park, or use some soil near your house. You can also try using plant potting mix. Try multiple to find differences!



### Materials Needed

- 1 sample of soil (potting soil or soil collected from outside)
- 2 jars or cups for sample containers
- vial of vinegar (or about 1 TBSP)
- vial of baking soda (or about 1 TBSP)
- water to mix

### Step 1: What is pH?

**pH** stands for power of hydrogen. Scientists use the pH scale to measure how acidic or basic a liquid is. pH is a number from 0 to 14. From 0 to 7 are acids, with 0 being the strongest. From 7 to 14 are bases with 14 being the strongest base.

*See page 2 for a visual pH scale.*

### Step 2: Make a hypothesis

Make a hypothesis of what you might observe. To determine pH levels, be ready to observe the following:

- If your soil fizzes with vinegar this means that the soil has an alkaline or basic pH
- If your soil fizzes with baking soda this means that the soil has an acidic pH
- If your soil does not fizz with either baking soda or vinegar, this means that it has neutral pH.

Based on where you collected your soil from, what do you think will happen?

### Step 3: Set up the experiment

1. Scoop 4 tablespoons of soil into each sampling jar.
2. To one jar, add 2 tablespoons of vinegar. If the soil bubbles or fizzes, it's alkaline. The chemical reaction that you're seeing occurs when an acid (vinegar) comes into contact with something alkaline (soil).
3. If no reaction occurs with the vinegar, test the second jar sample for acidity.

4. Add water to the soil to make it moist like mud and mix.

5. Add 2 tablespoons of baking soda to the mud mixture. If the soil bubbles or fizzes, the soil is acidic. The reaction you're seeing is the result of acidic soil coming into contact with an alkaline substance (baking soda).

If your soil doesn't react to either test, it has a neutral pH. Try another soil sample if you would like and repeat numbers 1 through 5!

### Why does the pH of soil matter?

Soil pH is important because it influences several soil factors affecting plant growth, such as

- soil bacteria
- nutrient levels
- nutrient availability to plants
- toxic elements
- soil structure

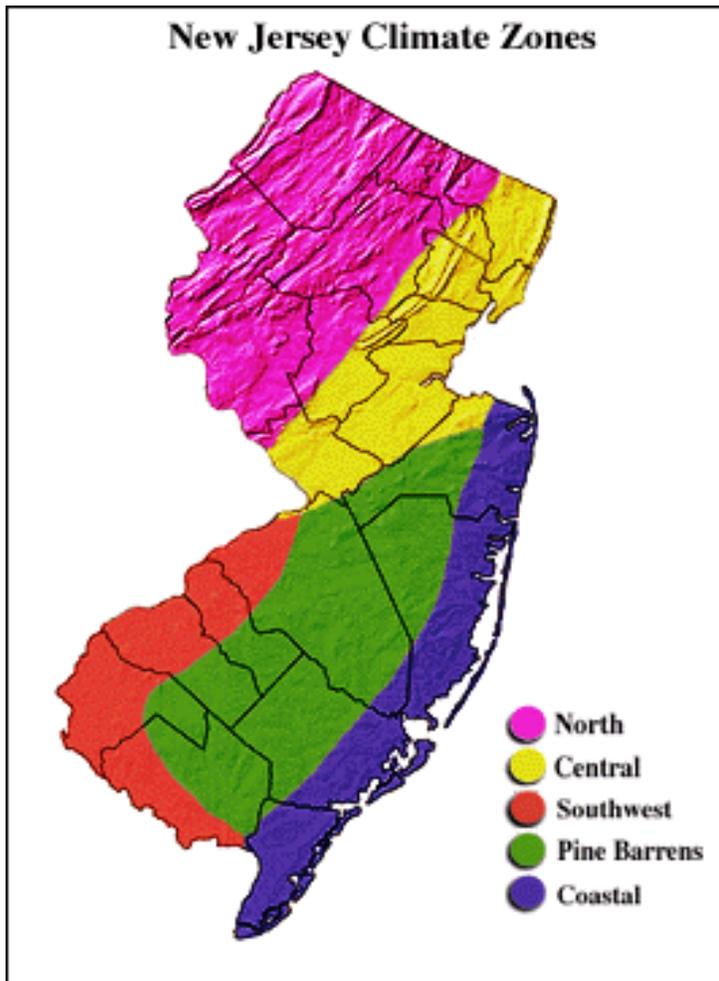
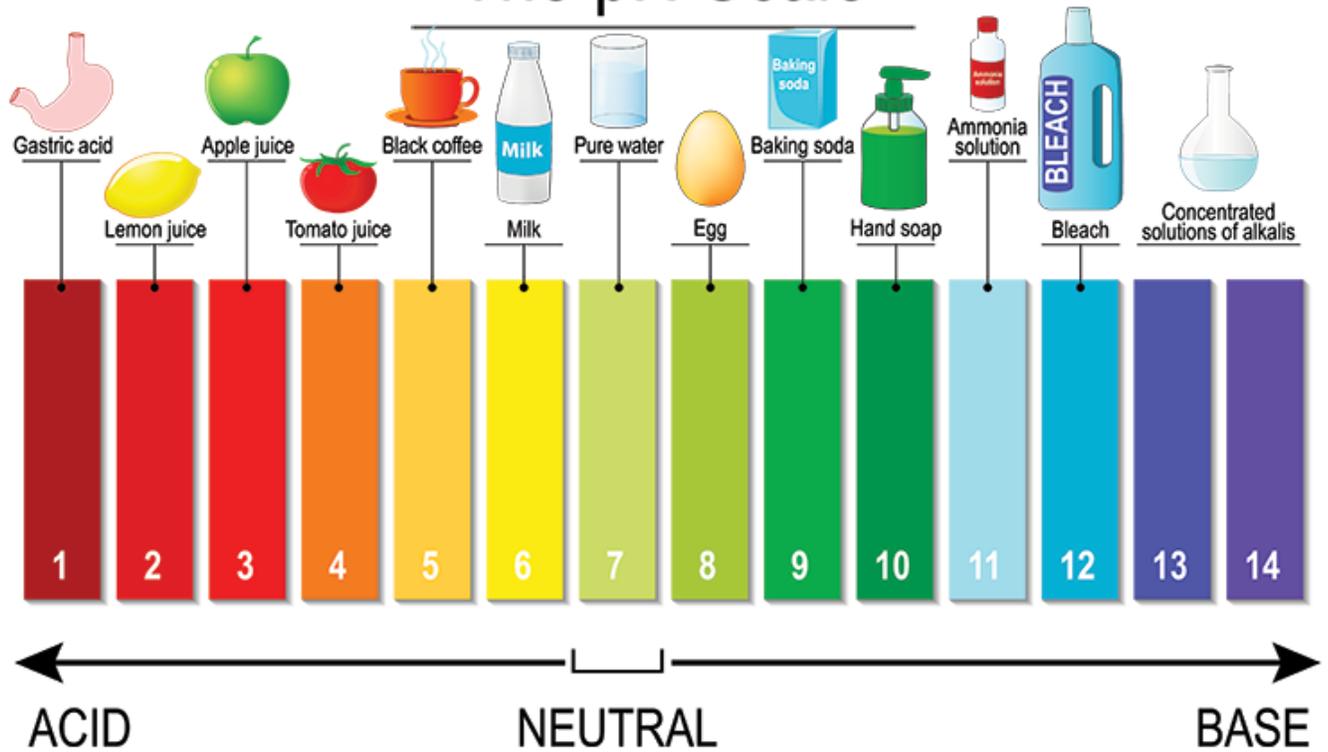
### Did You Know?

The "Blueberry Capital of the World" is located right across the Delaware River in New Jersey?

Some plants, like blueberries need a more acidic pH. This is why Hammonton, NJ, is known as the "Blueberry Capital of the World." Hammonton has more of an acidic soil than neutral because of the decomposing Pine Tree needles that drop from the trees in the **Pine Barrens**.

The **New Jersey Pine Barrens**, also known as the Pinelands, is the largest remaining example of the Atlantic coastal pine barrens ecosystem, stretching across more than seven counties of New Jersey. The name pine barrens refers to the area's sandy, acidic, nutrient-poor soil. Blueberries and cranberries thrive in these soil conditions.

# The pH Scale



Look at this map of New Jersey's Climate Zones. Can you find the Pine Barrens?

## New Jersey



Notice how Hammonton is located right in the middle of the Pine Barrens.

# Color in the Blueberries



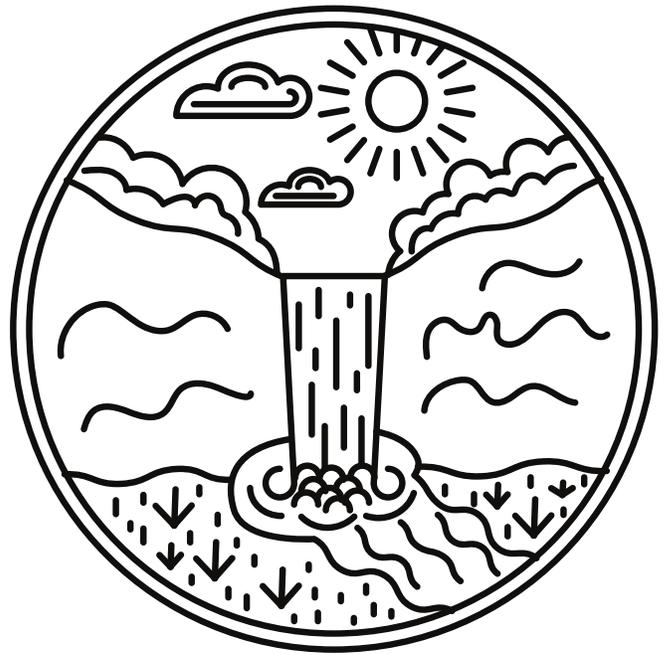
Paint the world  
**SUPER**  
COLORING

# Color in the Cranberries



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Color in the pictures!



Color in the people!



Did you know that rivers, lakes, animals, and people all like having a pH of about 6.5-8? This is because we rely on clean water, which has a pH of 7!