

**LESSON: Making an Impression****GRADE:****5****OBJECTIVES:****Matter & It's Interactions-**

- **5-PS1-3** Make observations and measurements to identify materials based on their properties.
- **5-PS1-4** Conduct an investigation to determine whether the mixing of two or more substances results in new substances.

**Science as Inquiry-****S.3-5.SI.3 Plan and conduct scientific investigations.**

- Students should engage in systematic observation, making accurate measurements, and identifying and controlling variables.
- Follow appropriate safety procedures when conducting investigations

**MATERIALS & RESOURCES:**

- Flowers and leaves for printing
- Watercolor paper
- Hammers
- Hard surface on which to work
- Paper towels
- Scissors
- Alum & cream of tarter
- Hot water
- Large pot for stove
- Cold water or hose
- 100% cotton fabric
- Plastic bags
- Wood to add weight
- Sun
- Examples of plant prints

**PRESENTATION:**

Share the examples of plant prints with class. Explain that we're going to experiment with two types of plant printing. The natural pigment or color in leaves and flowers will transfer to our fabric and paper, and we'll end up with some beautiful art to hang or use as cards. When fabric is used, we need to prepare it to receive the dye or pigment. We'll need to use a mordant, which is French for "to bite" – it causes the color to "bite" the fabric and look more intense. For this, we'll use 2 items found in the spice rack at the grocery store: alum and cream of tarter. Alum is short for aluminum sulfate and has been used since the times of the Egyptians. We use it to make pickles! Cream of tarter is used in cookies, but we use it to help colors to be clearer. We'll need to mordant our fabric before making our impressions of flowers.

**DIRECTIONS: ACTIVITY 1**

1. Dissolve 3 oz. of alum and 1 oz. cream of tartar in small amount of warm water. Put 4 gallons of water into a large enamel cooking pot and add mordant to the water. Put fabric into it and heat to a slow boil for 45 minutes.
2. Let fabric cool in the water. Remove and let dry.
3. Instruct students to bring leaves and flowers to print with next time we meet. Bring flowers and leaves that are not too dry or squishy.E4E4
4. Have each student fold their t-shirt or fabric piece in half and open it up Place flowers or leaves in desired pattern of half of fabric, then fold other half over it.
5. Give each student a plastic bag to hold fabric.
6. Take class outside in sun, and cover bags with wood (old shelf or similar). Let the sun do its solar baking, then at end of the school day, bring bags and wood back inside.
7. Remove plant material form fabric the next day and enjoy your plant printing!

**DIRECTIONS: ACTIVITY 2**

1. Give each student a piece of watercolor paper, and have students lay leaves or flowers on paper.
2. Cover the paper and plants with 2-3 layers of paper towels.
3. Using hammer, begin tapping lightly over area to set the plants, then hammer over the entire surface going top to bottom then side to side, until entire surface has been hammered. Be patient – it takes a while!
4. Gently lift up one end of paper towel stack and check plant impression on paper towel. If it looks like a good imprint on the paper towel, then it's probably good on the paper too.
5. During another class period, paper can be cut and glued onto colored paper for cards if desired.
6. Have some students make posters explaining the steps it took to accomplish the printing, and set up a display to share results.

**FOLLOW-UP:**

Discuss as a class which method they liked best or which produced the best results. Talk about why they think that method worked better. Were certain plants or leaves easier to print than others? Why?

**TIME:****Activity 1: 100- 120 minutes****Activity 2: 30-60 minutes**