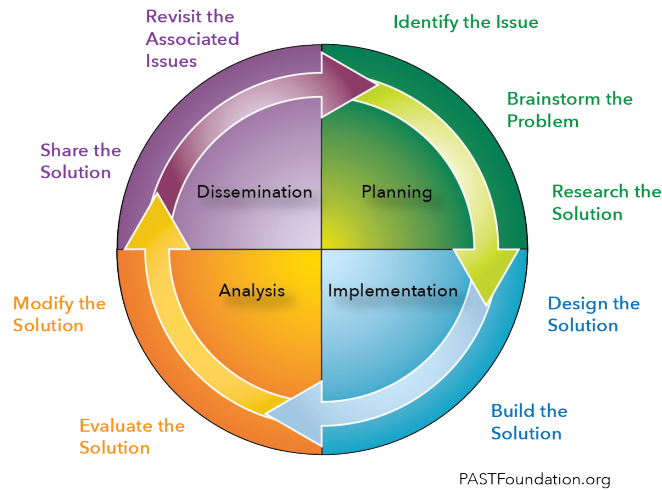


## Erupting Ornaments



**Problem Scenario:** You want to surprise your family with ornaments that also contain a surprise! You want the ornaments to have the biggest reaction possible when your family added the liquid. Which combination will be best?

**Challenge:** Find the combination of ingredients that creates the biggest reaction.

**Criteria:**

1. Only one liquid can be added to each ornament.
- 2.

**Materials:**

4 Clear Ornaments (plastic with removable cap)	Shallow bin to test (example: cookie sheet)	Turkey Baster or Funnel to add items into ornaments
Baking Soda	Vinegar	Lemon Juice
Lime Juice	Water	Optional: Glitter and/or Food Coloring

**Brainstorm:** Work together to answer the following questions and make a prediction:

1. What do you think will happen when mixing the different liquids with the baking soda? Think about your senses (sight, touch, sound and smell)

**Water:**

**Lemon Juice:**

**Lime Juice:**

**Vinegar:**

2. What causes the reaction that happens between the liquids and baking soda?

**Prediction:** Which baking soda and liquid combination do you think will have the biggest reaction? \_\_\_\_\_

**Build/Test:**

Take each ornament and fill with 2 tablespoons of baking soda. If you choose to add glitter or food coloring add into the ornament now.

Choose which liquid will be added into each of the ornaments (water, lemon juice, lime juice and vinegar).

Be sure each of the ornaments are placed in the shallow bin before you begin to add the liquids to test.

**Once the ornaments set up you are ready to test! Be sure to record all observations in the *evaluate section!***

Add 1/2 tablespoon of liquid into each ornament.

Record each observation in the evaluate section. Remember use your senses while you are observing!

Don't forget about your prediction!

**Evaluate:** What did you observe and was your prediction correct?

Water:

Lemon Juice:

Lime Juice:

Vinegar:

Was your prediction correct? \_\_\_\_\_

**Modify:** Wash out the ornaments and run the experiment again, but choose one (or more) modification.

1. Add more baking soda to the ornaments (1.5 tablespoons)
2. Add more liquid to the ornaments (1 tablespoon)
3. Choose a new liquid to test!
4. Video the reactions in slow motion to observe in more detail.
5. Create your own modification!

**Share:** Create an ornament to share with a family member! Add the baking soda and bring the liquid that created the largest reaction for your family member to try!

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