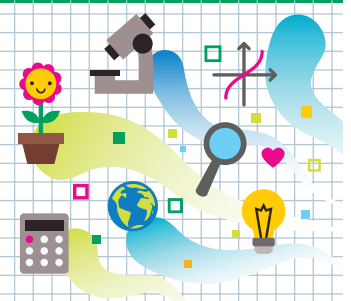




# HEADS IN, HEARTS IN

## Baking Soda Fizz

### Instructions for Set-Up:



### Supplies

- ☐ “Guide for Families” handout
- ☐ Clear plastic standup display (optional)
- ☐ 3 small bowls
- ☐ 3 medium bowls
- ☐ Liquid food coloring of any color
- ☐ Baking soda
- ☐ 3 pipettes or medicine droppers
- ☐ Vinegar (1 quart)
- ☐ Lemon juice (1 quart)
- ☐ Lemon-lime pop (2 liters)
- ☐ 3 labels (“vinegar,” “lemon juice,” “lemon-lime pop”)
- ☐ Large bowl for disposal of waste
- ☐ Display table

### Activity Preparation

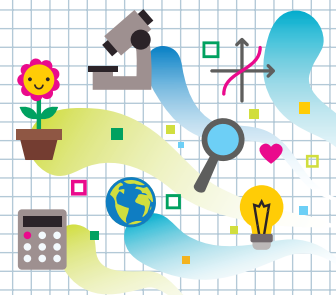
- Purchase or locate items on supply list.
- Print one copy of the “Guide for Families” handout. Laminate or place in a clear plastic standup display to allow participants to see it more readily.
- Put 3 to 4 drops of liquid food coloring in each small bowl.
- Pour a layer of baking soda into the bottom of each small bowl, thick enough to cover the bottom of the bowl and the food coloring.
- Fill one medium bowl with vinegar, one with lemon juice and one with lemon-lime pop.
- Label each bowl.
- Place the small bowls and medium bowls on the display table along with 3 pipettes or medicine droppers.

**Note:** This activity is best done with a facilitator who will clean up after each experiment by dumping the waste into the large bowl.





# HEADS IN, HEARTS IN



## Baking Soda Fizz Guide for Families

### Learning Objectives

#### What you need to know:

**Sodium bicarbonate – baking soda** as we commonly know it – is a chemical **base**. This base reacts with the **acid** of the vinegar (its scientific name is **acetic acid**), lemon juice and pop. This causes a **chemical reaction** called an **acid-base reaction**. This chemical reaction produces **carbon dioxide gas** when the **carbon** in the baking soda reacts with the **oxygen** in the vinegar, lemon juice or pop.

#### What you will do and learn:

You will gain an understanding of chemical reactions by mixing baking soda with three types of liquids.

### Instructions

1. Take a pipette or medicine dropper with vinegar (from bowl labeled “vinegar”) and drop by drop, add the vinegar to the baking soda (in one of the small bowls). What happens?
  - The **acetic acid** (the part of vinegar that makes it sour) reacts with the sodium bicarbonate (baking soda) to form **carbonic acid**. Carbonic acid is unstable and immediately falls apart into **carbon dioxide** and **water**. The bubbles you see are from the reaction that come from the carbon dioxide escaping the solution that’s left.
2. Next, take a pipette or medicine dropper with lemon juice (from bowl labeled “lemon juice”) and drop by drop, add the lemon juice to the baking soda (in one of the small bowls). What happens?
  - The same thing as when you mix baking soda and vinegar! An easier way to think about it: It’s an acid-base reaction because it involves an acid (**citric acid** in the lemon juice) reacting with a base (sodium bicarbonate, also called baking soda). This is a chemical reaction.
3. Last, take a pipette or medicine dropper with lemon-lime pop (from bowl labeled “lemon-lime pop”) and drop by drop, add the pop to the final bowl with baking soda. What happens?
  - Again, the **phosphoric acid** in lemon-lime soda reacts with the base (baking soda).
4. Discuss what you observed.