

**Gathering Activity: Key to stem #3**

This will only be 1 method of communication. In their circle corners leave a cute piece of paper for each girl. On the top of the paper have a sentence that starts \_\_\_\_\_ **is a special brownie friend because....** In the space have already written the name of another Brownie.....so that everyone will get a note. The girls will write something nice about someone else and then at the end of the meeting the girls can give their secret brownie friend the mail.

**Opening****Key to Stem #3****1st Experiment**

## Fizzy Balloons

**You will need: a balloon, an empty soda bottle, white vinegar, and baking soda.** Put 1/4 to 1/2 cup vinegar into the soda bottle. Then, hold the mouth of the balloon open and have a Brownie pour about a teaspoon of baking soda into the balloon. Shake the soda into the “bulb” or the main part of the balloon. Then, stretch the mouth of the balloon over the mouth of the bottle, trying to keep the main part of the balloon off to the side (so the soda isn’t dumped into the bottle right away.) Ask them what they think will happen when you mix the two things together. Finally, let a Brownie shake the soda into the bottle, all at once.



If the seal is tight, which it should be, the reaction between the soda and the vinegar will form a gas that inflates the balloon. If your balloon is over-inflating, simply take it off of the bottle. Just pay attention and you’ll be fine.

What happened?

Baking soda is a chemical called sodium bicarbonate. Vinegar is called acetic acid. These two chemicals react to form some different chemicals. One of these is carbon dioxide gas. This is called a **chemical reaction**. The gas is what inflates the balloon. We know a reaction is happening because we can see bubbles forming.

From [kitchenpantryscientist.com](http://kitchenpantryscientist.com)

**Experiment #2 ( also your craft)**

## Trefoil Crystals

**You will need Borax, boiling water, large styrofoam cups, pipe cleaners, string and popsicle sticks.**

First, twist your pipe cleaner into the desired shape ( in this case a trefoil but it could be any shape) . You will need to make sure that your shape will fit inside the cup without it touching the sides. You will need to fill the cup with  $\frac{3}{4}$  of the way with boiling water and then add about 2-3 tablespoons of borax. The more saturated your solution is, the larger your crystals will be. Stir until all the borax is dissolved and the solution is clear. Tie a string around the tail of the trefoil or other shape and tie the other end to a pencil. Gently lower the shape into the solution making sure that it is not touching any sides or the bottom. Set the cup in a safe spot that will not be disturbed. When the girls go home be sure to have mom or dad help them carefully get it home. When it is home make sure to tell them to make sure it is not touching the sides. When they wake up in the morning they will have a crystal trefoil!

**Experiment #3**

## Milk Rainbow

You will need: 1 pie plate, food coloring, liquid soap, milk

Method:

- 1) Fill the pie plate with warm, whole or 2% milk.
- 2) Add a few drops of food coloring in the centre of the pan. Make sure each drop of food coloring is separate from the others.
- 3) Add a drop of soap to the very middle of the pie plate. Watch what happens!

Explanation: Milk is made up of water, vitamins, fats and proteins. The last two of these ingredients are fairly sensitive to changes in the solution. Adding the soap causes the milk to react with the sap and

alter solubilities. This causes pandemonium with the fat and protein molecules and they start to bend, twist, contort, and swirl into all sorts of shapes. The food coloring simply acts as an indicator of the changes that are taking place.

## **Game:**

### **Key to stem #5**

Split the girls into teams. Give each team toothpicks and mini marshmallows. In their groups they will be given a certain amount of time.( that is up to you) Have the girls work together to build a tower. Once there time is up have each group show their tower to everyone and see which group got the tallest tower.

## **Closing:**