

AFTER-VISIT ACTIVITY

Dancing Popcorn—Teacher Information

Dancing Popcorn demonstrates several aspects of chemical reactions.

1.) A chemical change occurs whenever compounds are formed or decomposed. At the molecular level, a chemical change involves making or breaking of bonds between atoms.

Reactants disappear as chemical change occurs.

Products appear as chemical change occurs.

In this reaction, the reactants are baking soda and white vinegar.

The product is carbon dioxide gas. It is the carbon dioxide gas that clings to the popcorn kernels and makes them “dance.”

2.) Dancing Popcorn is an **acid-base reaction**. Scientists use something called the pH scale to measure how acidic or basic a solution is.

Acids are compounds that break into H^+ (hydrogen) ions and another compound when placed in an aqueous solution. The word acid comes from the Latin word acidus, meaning “sharp” or “sour.”

Bases are compounds that break into OH^- (hydroxide) ions and another compound when placed in an aqueous solution. Another word for base is alkali.

Acids have a low pH value (0-6) while bases have a high pH value (8-14). A neutral solution (distilled water) has a pH in the middle (7).

3.) In any chemical reaction, there is a **temperature change**. In the Dancing Popcorn reaction, heat energy is being absorbed by the reaction, making the glass feel cooler. We call this type of reaction **endothermic**.

The opposite of endothermic is **exothermic**—when heat energy is given off.

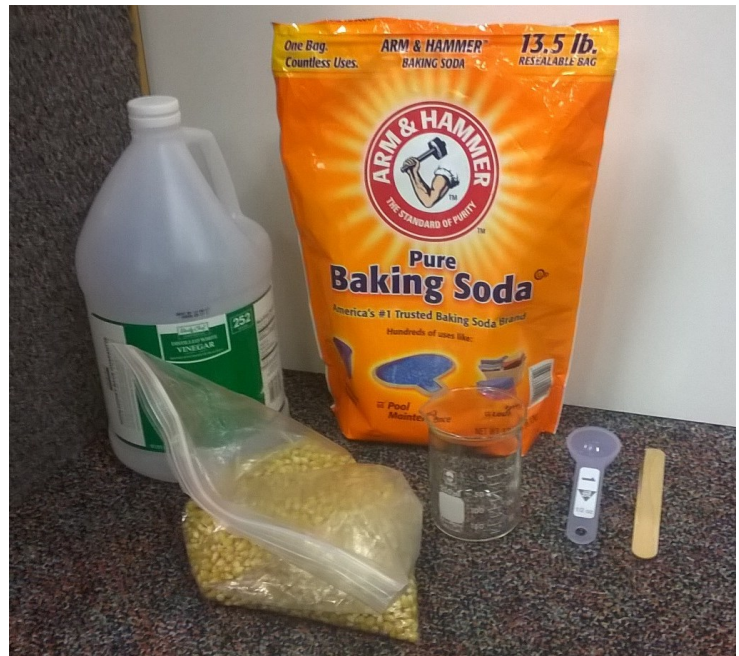
4.) In the Dancing Popcorn reaction, the popcorn will “dance” for 10 minutes or longer. This can be used to present the concept of **reaction rates**, or how long a chemical reaction takes.

AFTER-VISIT ACTIVITY

Dancing Popcorn

Materials:

- Clear glass or jar
- Popcorn kernels
- White vinegar
- Baking soda
- Tablespoon
- Water
- Clock
- Thermometer



Steps:

- 1.) Fill the jar with about 1 cup of water.
- 2.) Stir in 2 tablespoons of baking soda. Most of it will sink to the bottom.

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AFTER-VISIT ACTIVITY

Dancing Popcorn, Continued

Steps:

- 3.) Drop in about 10 popcorn kernels.
- 4.) Prepare for the reaction! Add 2 tablespoons of vinegar and watch what happens.



More to Do:

What happens if you add more kernels?

Try experimenting with other small items in your bubbly water. Make a hypothesis for each: Will this object float, dance or sink to the bottom?

Use a thermometer to measure the temperature of the solution before and after adding the vinegar, and again at the end of the reaction.

Time the reaction. How can you speed up the reaction? Try using warm water.

Magical Mixtures



3-9+

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Dancing Popcorn Data Sheet

Name: _____

Material used (i.e. Popcorn)	Length of Reaction (minutes)	Temperature of solution at beginning (degrees F)	Temperature of solution at end (degrees F)

Results: _____

