KOHL CHILDREN'S MUSEUM

STEAM Explorers

THE PLACE WHERE AWESOME LIVES

Baking Soda Rocket

Your rocket will fly up, up and away with vinegar and baking soda!

Big Idea

Everyday kitchen items can be used to create simple chemical reactions.

Standards

1.A Demonstrate understanding through age-appropriate responses.	Children will create their own unique Baking Soda Rocket following the teacher's simple one, two, and three step directions.
7.A Measure objects and quantities using direct comparison methods and non-standard units.	Children will measure out 1TBS baking soda to put into the packets.
10. A Generate questions and processes for answering them.	Children will begin to make and ask meaningful questions and answers with a little teacher support
12.C Explore the physical properties of objects.	Children will explore and discuss simple chemical reactions with the baking soda and vinegar with the teacher assistance

Materials

- Empty plastic bottle
- Duct tape
- Cork that fits the bottle
- Toilet paper or tissue paper
- 3 pencils/pens (for tripod)
- Vinegar
- Scissors
- Funnel
- Baking Soda

Setup

At a table lined with newspaper, set out the empty plastic bottle, 3 pencils or 3 pens, and duct tape.

Directions

1. Begin by creating your rocket. Use an empty plastic bottle, three pencils or pens and duct tape. Make sure that your bottle is corked and standing on the three pencils or pens creating a tripod.
2. Next, step is creating the rocket fuel or baking soda packets. Cut a square piece of toilet paper or ½ piece of tissue then put 1 scoop of Baking Soda in the middle and roll it together tight. Be sure to twist the ends of the toilet paper or tissue so it will fit inside the opening of the bottle. Make several baking soda packets.

3. Go outside to an open area about six feet away from buildings or cars and find a flat, safe launching "pad". Set up a video recorder so you can record your rocket launch *(and send your results back to KCM!*).
4. Next, have an adult with safety glasses fill the empty plastic container with vinegar using the funnel.
5. Very carefully place one of the baking soda packets into the plastic container, put cork on and quickly get away.
6. Watch what happens. *Guess how high you think the rocket will go? How long does it take to happen?* When the lid pops off the rocket should launch. This could take several tries. Tip: Make sure your cork is secure and your rocket is standing on the pencils or pens.
7. Then try changing the amount of baking soda to vinegar ratio. *What do you think will happen?*

Baking soda and vinegar mix together to create a reaction resulting in water and carbon dioxide gas. The pressure of the carbon dioxide gas forces the cork to pop off and the rocket to launch. This is an example of Newton's third Law of Motion. When you apply a force in one direction, the opposite equal reaction will take place in the opposite direction.

8. Be good to the earth and rinse away the baking soda and vinegar residue left behind the experiment.

Investigation Questions:
Q. What do you think will happen when the baking soda and vinegar are in the rocket?
Q. Guess how high you think the rocket will go.
Q. How long does it take to happen?
Q. What happens when you change the ratio of baking soda to vinegar?