



PARENT UNIVERSITY

Unlimited Hands-On Science

OCTOBER 2016

STANDARD 5.P.2: The student will demonstrate an understanding of the physical properties of matter and mixtures.

“CHEMICAL REACTIONS 101”

- I. Intro (Rules)
- II. Physical vs Chemical Reactions? (Discussion/Demonstration)
 - A. Physical Changes affect size and shape
 - B. Chemical changes are a result of mixing 2 substances and creating something different.
- III. Let's Demonstrate with Chemical Change Indicators (Hands-On)
 - A. Color Changing Experiment
 1. Introduction to Phenolphthalein
 2. Intro to Acids/Bases
 - B. Bubbling Potion
 1. Intro to Mixing
 2. Mixing of Acids and Bases
 - C. Transformation of Matter between states (putty is made)
 1. Students demonstrated with changing pitches (High vs. Low)
 - D. Temperature Change
 1. Exothermic Reaction
- IV. Review (Terminology)
 - A. Chemical Reaction
 - B. Physical Reaction
 - C. Exothermic
 - D. Chemistry

***Students are encouraged to understand that matter can never be created or destroyed.

Engaging Experiments for HOME

Snowflake Crystals

Activity: To make a snowflake crystal

Materials:

- string
- wide mouth jar (pint)
- white pipe cleaners
- borax (see tips)
- pencil
- boiling water
- blue food coloring (opt.)
- scissors

Method:

1. The first step of making borax crystal snowflakes is to make the snowflake shape. Cut a pipe cleaner into three equal sections.
2. Twist the sections together at their centers to form a six-sided snowflake shape. Don't worry if an end isn't even, just trim to get the desired shape. The snowflake should fit inside the jar.
3. Tie the string to the end of one of the snowflake arms. Tie the other end of the string to the pencil. You want the length to be such that the pencil hangs the snowflake into the jar.
4. Fill the widemouth pint jar with boiling water.
5. Add borax one tablespoon at a time to the boiling water, stirring to dissolve after each addition. The amount used is 3 tablespoons borax per cup of water. It is okay if some undissolved borax settles to the bottom of the jar.
6. If desired, you may tint the mixture with food color.
7. Hang the pipe cleaner snowflake into the jar so that the pencil rests on top of the jar and the snowflake is completely covered with liquid and hangs freely (not touching the bottom of the jar).

8. Allow the jar to sit in an undisturbed location overnight.
9. Look at the pretty crystals!!! You can hang your snowflake as a decoration or in a window to catch the sunlight :-)

Tips:

1. Borax is available at grocery stores in the laundry soap section, such as 20 Mule Team Borax Laundry Booster. Do not use Boraxo soap.
2. Because boiling water is used and because borax isn't intended for eating, adult supervision is recommended for this project.
3. If you can't find borax, you can use sugar or salt (may take longer to grow the crystals, so be patient). Add sugar or salt to the boiling water until it stops dissolving. Ideally you want no crystals at the bottom of the jar.

AWESOME REFERENCES

1. http://www.lovemyscience.com/cat_pressure.html
2. <http://www.sciencekids.co.nz/experiments.html>
3. <http://kids.usa.gov/>
4. Internet4classrooms.com/

JUST A FEW BOOKS

1. *Amazing Kitchen Chemistry Projects You Can Build Yourself* by Cynthia Brown
2. *Chemistry, Pre-Level 1 (Real Science-4-Kids)* Rebecca W. Keller Published by Gravitas Publications, Inc. (2005-03-01) ISBN 10: 0976509709 / ISBN 13: 9780976509707