



# Snow Volcanoes!

Adaptable for Many Grade Levels



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## LESSON SUMMARY:

In this activity, students make volcanoes with snow and a few other ingredients. While creating their volcanoes, they will explore the states of matter - solids, liquids, and gases! This is a fun and engaging opportunity to study science and math outdoors.

## GRADE LEVEL STANDARDS:

### Maine State Learning Results:

#### PS1.A: Structure and Properties of Matter

Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature. Matter can be described and classified by its observable properties. (2-PS1-1) Different properties are suited to different purposes. (2-PS1-2),(2-PS1-3) A great variety of objects can be built up from a small set of pieces. (2-PS1-3)

#### PS1.B: Chemical Reactions

Heating or cooling a substance may cause changes that can be observed. Sometimes these changes are reversible, and sometimes they are not. (2-PS1-4)

## PRIOR LEARNING

Anything that takes up space is called matter. Air, water, rocks, and even people are examples of matter. Different types of matter can be described by their mass. The mass of an object is the amount of material that makes up

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the object. A bowling ball, for example, has more mass than a beach ball. There are four natural states of matter: Solids, liquids, gases and plasma.

## OBJECTIVES

Students will explore states of matter including solids, liquids, and gases, and understand that when we mix two or materials we get a new substance.

Students will understand that this new substance is called the gas gain.

Students will learn that when you are mixing an acid (the vinegar) and a base (baking soda) it produces a gas called carbon dioxide.

## MATERIALS

- Snow
- Cups
- Vinegar
- Food Coloring
- Baking Soda
- Jell-O Packets
- Baskets



## BOOKS

- Eruption! The Story of Volcanoes (Level 2) by Anita Ganeri
- Volcanoes - Mountains That Blow Their Tops (Level 3) by Nicholas Nirgiotis
- Volcanoes! Mountains of Fire (Level 4) by Eric Arnold

## PROCEDURE

Designate 4 teams of students. Each team should have a basket containing the following supplies: a large cup, a bottle of vinegar, food coloring or a jello packet, a box of baking soda.

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Each team should have the following directions:



1. Form your snow volcano.
2. Place cup into the center of volcano, pack the snow around it.
3. Fill cup with baking soda.

**For the next steps, each group does something different.**

**Group 1:** Add a packet of jello power to your volcano, directly on top of your baking soda. Then, pour the vinegar on top until it is empty.

**Group 2:** Add liquid food coloring into the volcano, directly on top of your baking soda. Then, pour the vinegar until it is empty.

**Group 3:** Mix the liquid food coloring into vinegar. Pour it directly on top of the baking soda until it is empty.

**Group 4:** Mix the jello into the vinegar. Pour it directly on top of the baking soda until it is empty.

After each class is finished, measure to see which cold lava had flowed the furthest down the volcano side. *(When the students at Bay Ridge Elementary tried this, the team with the pre-mixed jello and vinegar solution traveled farther by far.)* After the experiment, have a class discussion about factors that could affect their volcano's lava flow, such as the size of the cup, the peak of the volcano, etc.



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