

**Volatile Volcanoes**  
**4<sup>th</sup> Grade**  
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**References:**

Any Introductory Geology Book

**Benchmarks & Objective:**

SLC/GLI #: ES-10

**Materials:**

- Diet Coke
- Mentos
- Homemade playdough to make volcano
- Food Coloring
- vinegar
- baking soda
- Cups to measure with

**Target Concepts:**

- Students will understand that volcanic eruptions may be very explosive. This may radically change the landscape and climate. Other volcanoes are much less eruptive.

**Initial Introduction:**

Students will examine a teacher-made Diet coke and Mento volcano. After this demo, students have built their own volcanoes at home and they are encouraged to erupt them (students should only work with vinegar and baking soda). They will compare how high up each eruption went and note that the Diet Coke eruption went much higher. Diet Coke is good analogy for volcanoes because of its carbonation--- real volcanoes similarly release a lot of gas including carbon dioxide.

**Procedure:**

Students will draw each eruption and compare their heights. How fast do volcanoes change the landscape compared to streams? Why are some volcanoes more eruptive than others? After this discussion students will look at lava samples and talk about the difference between lava and magma. Why is the inside of the earth hot?

**Target Observations:**

- Students should observe that volcanoes may erupt violently and distribute gas over many miles.
- Students should note that the earth is formed of different layers and that volcanic activity indicates a churning earth. (this is a preface to a discussion on plate Tectonics)

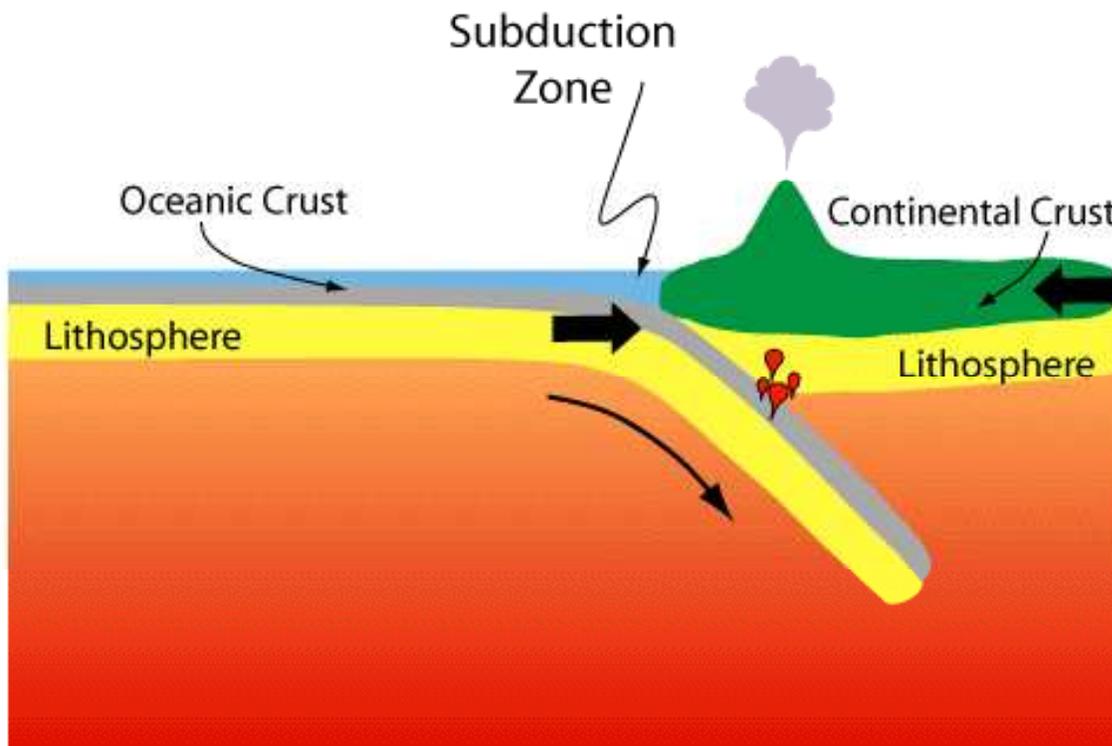
**Summary & Discussion:**

Students will be able to raise any questions they have about volcanoes after they draw and discuss the volcanoes.

## VOLCANOES AND PLATE TECTONICS

NAME:

- 1) How is the balloon volcano model different from the vinegar and baking soda model?
- 2) What happened to the lava after the eruption? How is this like a real volcano?
- 3) One way in which volcanoes form is when ocean crust sinks underneath continental crust. (Ocean crust is heavier per unit area than continental crust). Friction causes melt and the molten rock (magma) rises to the surface.



Do you think ocean crust is **heavier** or **lighter** per unit area or than continental crust? (circle one)

- 4) We scraped Oreos on our teeth what happened to the filling?
- A) It built up on our teeth like the ocean crust builds up against continental crust.
  - B) It caused an eruption.
  - C) The entire Oreo broke up into pieces at the same time.
- 4) The lava flowed down the volcano. On a real volcano the molten lava would carry rock down the sides of the volcano. Ultimately, this rock would end up piled on an area with low slope (a flat area). Where this lava and rock piled up would be an area of:
- A) Erosion
  - B) Deposition
  - C) Chemical Weathering