

Name: _____

Volcano Challenge

Problem 1: Build a model of a volcano that will erupt and will not cause damage on your model town. Build the town in the area least likely to get damage.

Problem 2: Create lava that will have a viscosity that causes the least damage as it erupts and flows toward your town.

The Criteria:

1. The volcano must be made of only the modeling clay given to you in class.
2. The film canister will be used to mix the magma for the eruption and will be placed in the crater of your volcano.
3. The film canister must be flush with the crater of the volcano. There cannot be any gaps or holes in the volcano that will trap the lava.
4. Your model volcano must have at least the following dimensions. 5 cm in height and 8 cm in width at the base.
5. The base must be flush with the bottom of the bin. No moats to trap the lava.
6. The shape of the volcano must be cylindrical, but it can have ridges and glacial valleys in sides of the volcano as long as they are not trapping the lava from flowing down the flanks.
7. The lava can only be created with the given class materials and must fit into the film canister.
8. Your volcano needs to be in the center of the bin and there must be houses and buildings on all sides of the volcano. (Split the bin into 4 quarters and you need equal numbers of structures on each side.) You may however, place those structures anywhere within that quarter.
9. You must place all of your town pieces in your bin during the eruption.

Experiment 1: *What mixture will make the viscosity you desire for you volcano?*

Materials:

- Vinegar (1/2 film canister)- Required Material
- Baking soda- 1 Tbs- Required Material
- Dish soap
- Corn Syrup
- Water can be any temperature

Procedures:

1. Fill the film canister half full with vinegar
2. Add any other liquid you will use such as water, dish soap, corn syrup
3. Add ¼ - ½ table spoon of baking soda
4. Record in data table below your results

Data for Experiment 1: *What mixture will make the viscosity you desire for your volcano?*

Type of Mixture →	Regular mixture of just Baking Soda and Vinegar	Regular Mixture plus Dish Soap	Regular mixture plus Corn Syrup	Regular Mixture plus Water
Amount of added material to regular mixture				Warm or Cold
Observations				

Conclusion: *What mixture will make the viscosity you desire for your volcano?*

Experiment 2: *What shape of volcano will allow you to predict where the flow of lava will go?*

Materials:

- Modeling clay for volcano
- Film canister for magma
- Tray to capture flowing “lava”

Procedures:

1. Build your basic model volcano with 5 houses.
2. Experiment using water to see how different shapes of the volcano direct where the flow of lava might go.
3. Adjust model as needed.

Draw a picture of your volcano:



Experiment 3: *Test the viscosity of magma you picked **with** the shape of volcano you designed. You may want to take photos or video of what happened during your testing to remember what happened.*

Draw a picture of your experiment as the “volcano” erupts. Show where the “lava” goes.



Conclusion: How many houses were untouched?