



STEM KIT

BUILD & LEARN GUIDE

VOLCANOES & ERUPTIONS



SUSTAINABLE
MATERIAL



NO GLUE
OR MESS



SAFE AND
EASY USE



STEMi
INTELLIGENT

PROJECT OVERVIEW

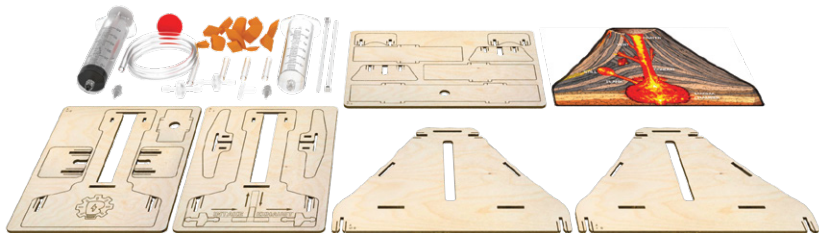
Today you will build and test your own BrainStorm Volcano STEM Kit. This model helps you explore how pressure builds inside a system and how that pressure can be released in a sudden eruption. As you use the kit, you will observe what happens before, during, and after the eruption and connect those observations to real volcano science.

SAFETY WARNINGS:

Please read all safety warnings before use:

- **Choking Hazard:** Small parts not for children under 6 years or any individual who has a tendency to place inedible objects in their mouths.
- Eye protection should be worn at all times.
- Adult supervision required.
- Use the model only as directed and keep hands and face clear during testing.

MATERIALS:



Disclaimer: Colors and parts may vary slightly from those shown in images or instructions, depending on available materials. All variations function the same and do not affect the performance or assembly of the kit.

1

Carefully push out all wooden pieces from the panels.



NOTE: If any wooden pieces are hard to remove, use a blunt tool to carefully punch them out, and ask an adult for help if needed. Use the sanding stick included in your kit (it looks like a small nail file) to smooth out any rough edges or spots where pieces don't fit together easily. Just find the tight spot and gently sand the edge until it fits just right.



2



3



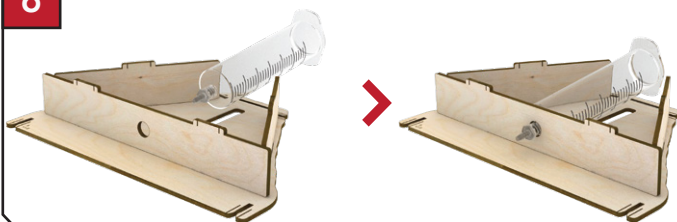
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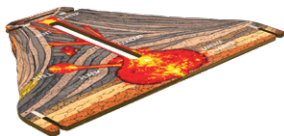
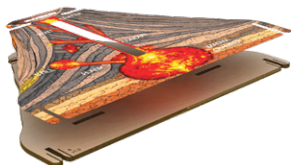
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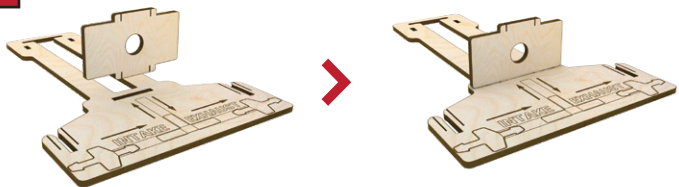
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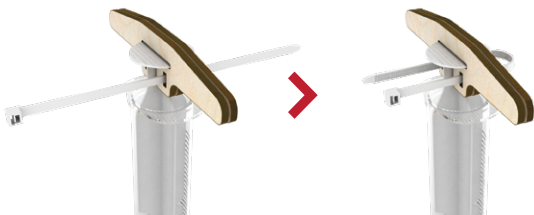


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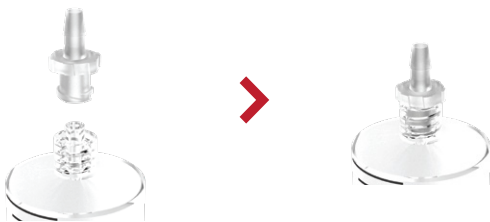


13

Secure the pump with a long zip tie.



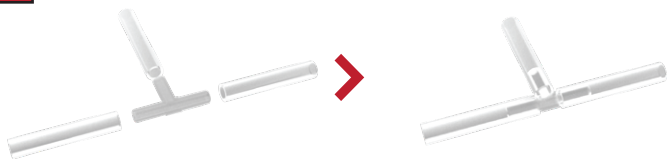
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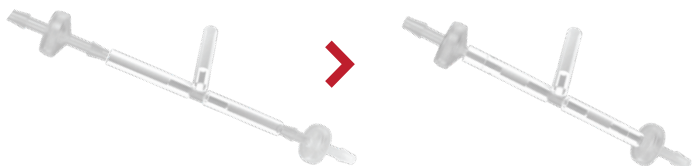
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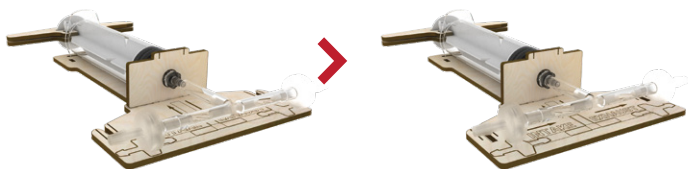
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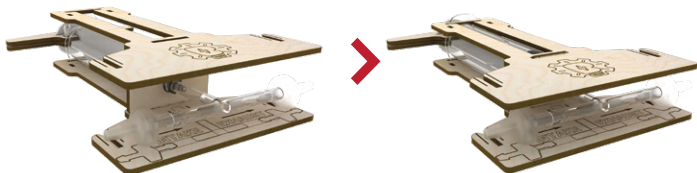
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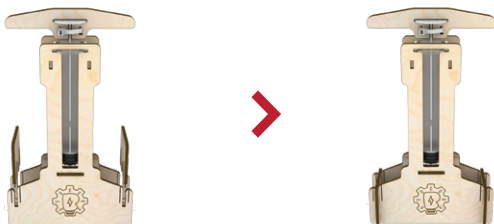
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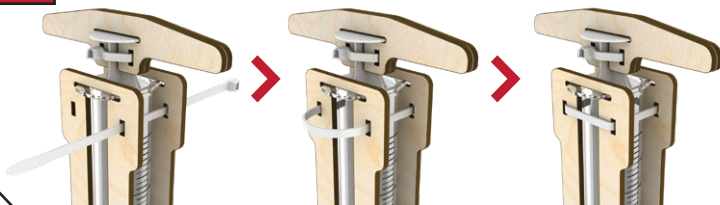


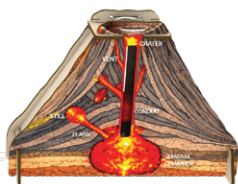
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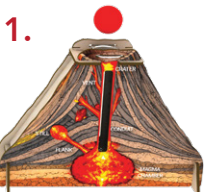
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Secure the pump with a long ziptie.

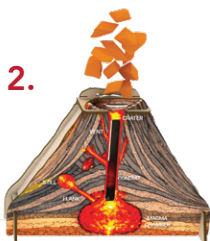




How to Use:



Insert the lava bomb ball into the volcano syringe

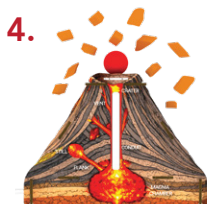


Insert the magma foam into the volcano syringe



Lift the pump syringe up
Press the pump down.

- Softly = Slow eruption
- Fast = Explosive eruption



Observe and record the eruption results!

VOLCANO ACTIVITY

After your Volcano STEM Kit is assembled, place it on a flat, stable surface. Make sure all parts are connected correctly and that the model is ready before testing begins. Follow teacher or adult directions carefully and observe the model closely during each trial.

As you test the model, pay attention to what happens before the release, not just the eruption itself. Look for signs that pressure is building inside the system. Then observe what happens when the model releases that pressure. Compare repeated trials and look for patterns in how the system behaves.

WHAT TO OBSERVE

- What happens before release?
- Does pressure appear to build gradually or quickly?
- Does the eruption happen suddenly or slowly?
- What part of the model shows resistance?
- How does the model help explain a real volcano?



VOCABULARY

Volcano:

An opening in Earth's surface where magma, gas, ash, and other materials can escape.

Magma:

Melted rock beneath Earth's surface.

Lava:

Magma that reaches Earth's surface.

Vent:

An opening where magma and gases escape from a volcano.

Pressure:

A force that builds when magma and gas are trapped inside a system.

Eruption:

The release of magma, gas, ash, and energy from a volcano.

Crust:

Earth's outer solid layer.

Tectonic Plates:

Large pieces of Earth's crust that move slowly over time.

Gas:

Material trapped in magma that can expand and increase pressure.

Model:

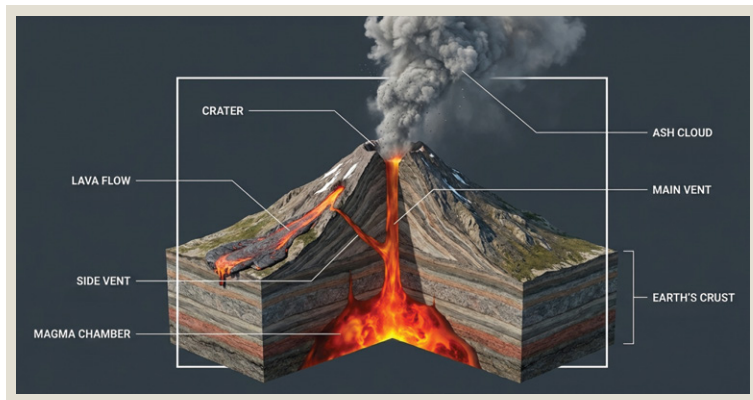
A simplified representation used to help explain how something works.

VOLCANO 101

A volcano is an opening in Earth's surface where melted rock, gas, ash, and other materials can escape. Volcanoes form because Earth is active below the surface. Deep inside Earth, heat can melt rock and create magma. Since magma is less dense than the rock around it, it can begin moving upward. If magma and gas become trapped, pressure starts to build.

When the pressure becomes greater than the resistance around it, an eruption can happen. Some eruptions are gentle and release flowing lava. Others are more explosive and send ash, gas, and broken rock into the air. The type of eruption depends on how magma, gas, and pressure behave inside the system.

Scientists study volcanoes to better understand how Earth changes and how eruptions may affect people, land, and nearby communities.



VOLCANO FUN FACTS

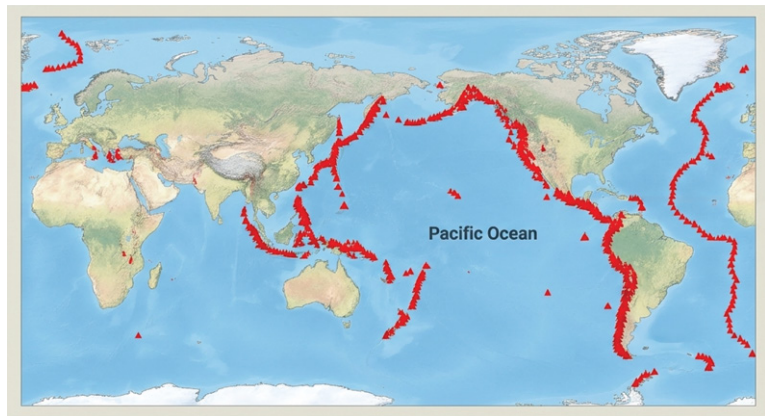
- Volcanoes can build mountains and islands.
- Some eruptions happen quickly, while others build over time.
- Volcanoes can help create fertile soil.

WHERE VOLCANOES ARE FOUND

Volcanoes are not found randomly around the world. Many are located where tectonic plates meet. Tectonic plates are large pieces of Earth's crust that move slowly over time. When plates move apart or when one plate pushes beneath another, magma can rise and form volcanoes.

One of the best-known volcanic patterns on Earth is the Ring of Fire, a large area around the Pacific Ocean where many volcanoes and earthquakes occur. This region follows major plate boundaries and includes some of the most active volcanoes in the world.

Some volcanoes also form above hot spots, where heat rises from deep inside Earth and melts rock beneath the crust. The Hawaiian Islands are one example of volcanoes formed over a hot spot.



LOOK FOR IT:

Many volcanoes line up along plate boundaries instead of appearing spread evenly across Earth.

PRESSURE, GAS, AND ERUPTIONS

Pressure is one of the most important causes of volcanic eruptions. As magma rises toward Earth's surface, gases inside it begin to expand. If the magma is trapped or moving through narrow pathways, the gas cannot escape easily. This causes pressure to build inside the volcanic system.

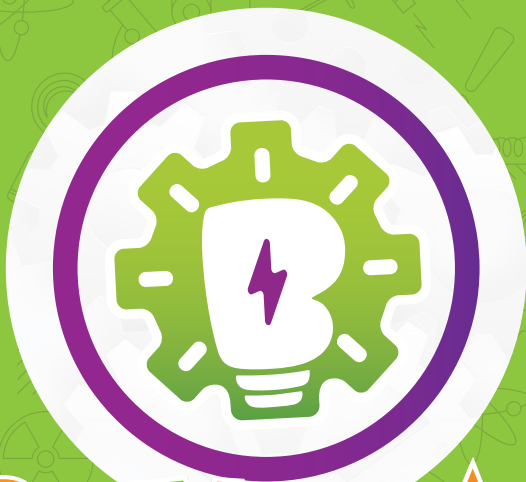
If gas escapes slowly, the eruption may be quieter and release flowing lava. If gas remains trapped, pressure can build longer and create a more explosive eruption. This is why some volcanoes erupt gently while others erupt with much greater force.

Your BrainStorm Volcano STEM Kit models this same big idea. As you test the kit, you will observe how pressure can build inside a confined system, remain contained for a time, and then release once a threshold is reached.



BIG IDEA:

Pressure can build over time, even when the system looks stable from the outside.



STEM KIT

VOLCANO BUILD BOOKLET

For more information on our STEM Kits visit:

www.brainstormedu.com/stem-kit-instructions


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 **STEM EDUCATION**

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