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Glossary:

Atmosphere: All the air surrounding Earth

Biosphere: All living things like people, plants, birds, fish and other animals

Convergent Boundary: Tectonic plates that collide into each other

Divergent Boundary: Tectonic plates that move away from each other

Geosphere: All of the rocks, soil, and sand on the Earth's crust and all of the lava in the mantle

Hydrosphere: All of the water on Earth including oceans, rivers, lakes, rain, snow, and glaciers

Tectonic Plates: Broken pieces of the Earth's crust

Transform Boundary: Tectonic plates that slide past each other



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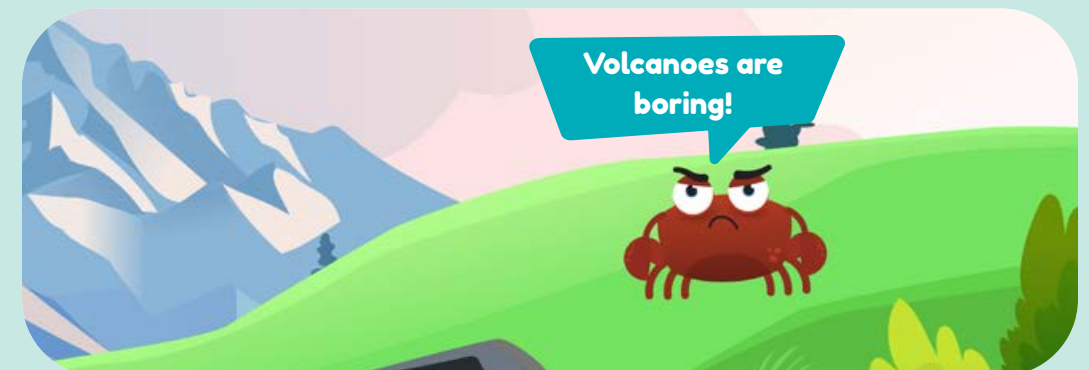
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THE ADVENTURES OF Spriggy & Twiggy

Spriggy and Twiggy are Sprowteez. They live with their Sprowtee friends on Sprowt Island. They are clever, funny and kind little scientists and always very curious...

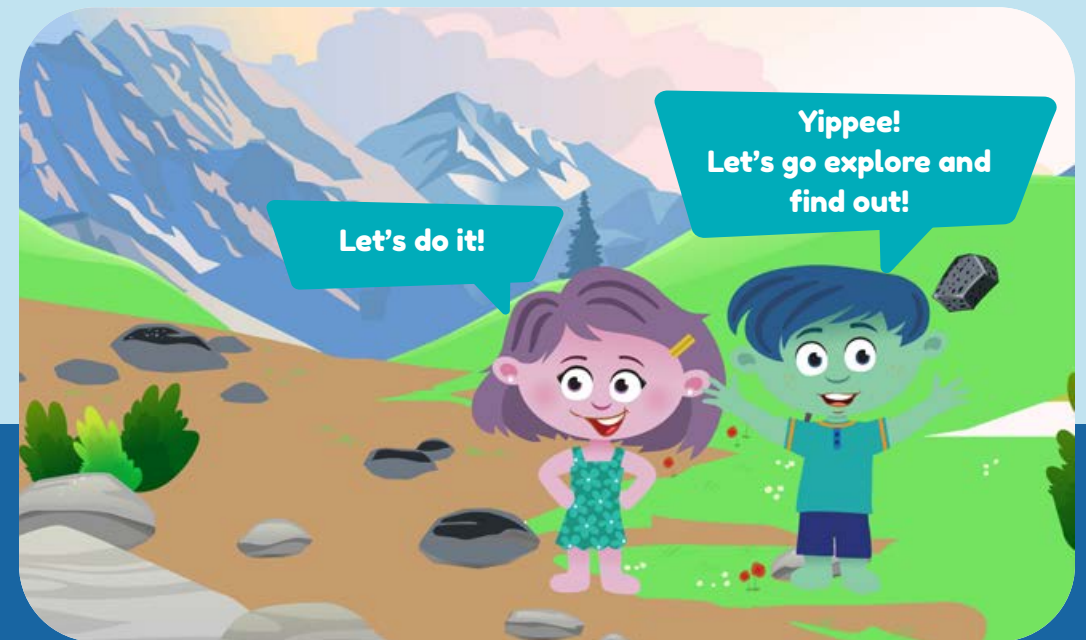
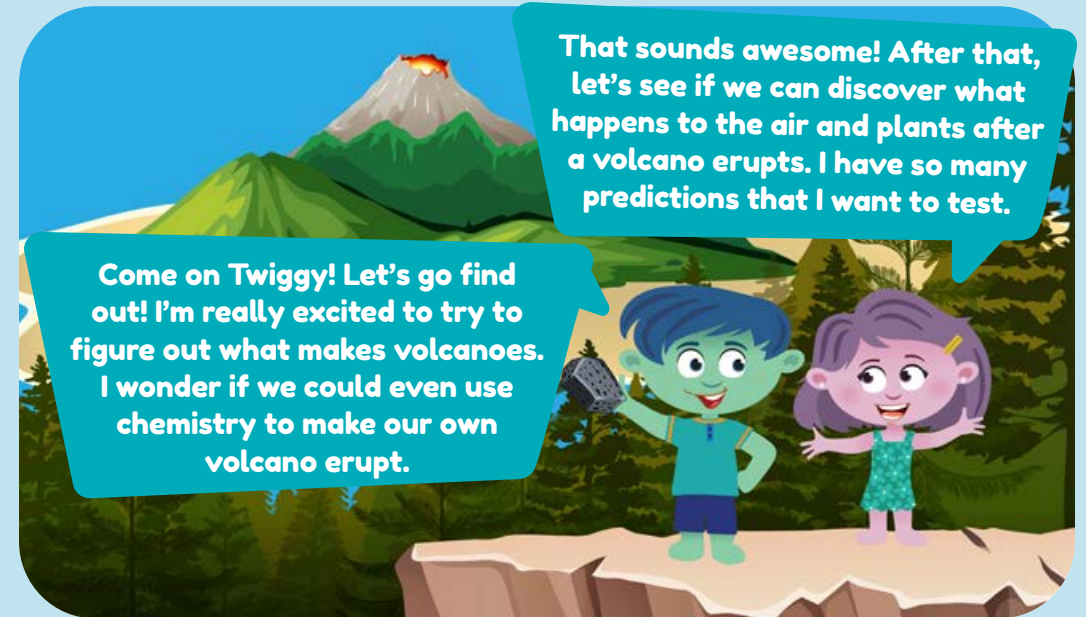
Joining them is their moody friend, Crabby who isn't always enthusiastic like the Sprowteez.

They are hiking up a tall mountain and finding big black rocks. Spriggy picks one up and Twiggy notices the holes in it.





Crabby shrugged and walked away kicking rocks as he went.



The Sprowteez jump up with excitement to discover more about planet Earth!

Blowing Their Tops!

VOLCANOES

A volcano is an opening into the hot inside of our planet.

There are about **1,500** active volcanoes **on land** and another **80** active volcanoes **under the ocean**.

Lava, gas, hot magma, and ash come out of volcanoes.

TYPES OF LAVA

Runny Lava

- * Runny lava flows quickly (like a fast river) and when it cools, turns into gentle sloping hills. This is called pahoehoe (pah-hoey-hoey), which is a word from Hawaii. (It's fun to say!)



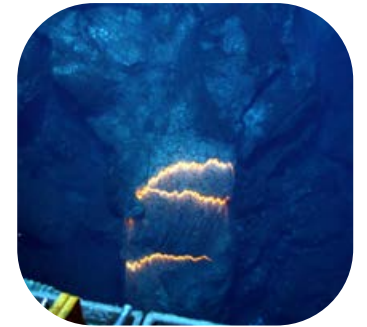
Thick Sticky Lava

- * Thick sticky lava does not flow as far as runny lava and can make steep mountains. Hawaiians call this 'A'ā (ah-ah).
- * Thick sticky lava volcanoes can have big explosions and launch lava and ash up in the air as fast as 200 mph (as fast as a race car!).
- * These can be so explosive that they can even blow off the top of the volcano.



Pillow Lava

- * The third type of lava is called pillow lava and it's created by underwater volcanoes. As soon as the lava touches the water, it cools and forms a hard shell that looks like a pillow. Those pillows crack when new lava comes out and forms more pillows.



Volcanoes can be very dangerous but they also help the Earth:



PREDICT IT!

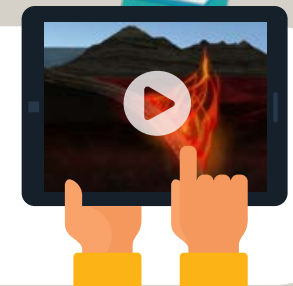
What good things do you think a volcano can do for our planet and us?

Draw or write your prediction:



▶ SEE THE POWER AND WONDER OF EARTH'S VOLCANOES

<http://tiny.cc/iSprowt-erupt>



Deep inside our Earth pressure and heat are building. This heat has to escape – somewhere. The heat escapes by rising to the surface of the Earth's crust. This is when a volcano erupts. We can't create a model of that amount of heat and pressure, so instead we're going to use chemistry to create a chemical eruption.

VOLCANO PART 1:

CREATE A CHEMICAL VOLCANO ERUPTION WITH SPRIGGY



GET READY



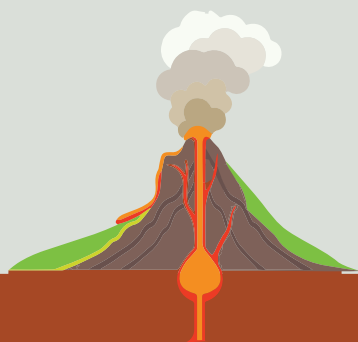
WHAT YOU NEED:

- ⦿ Volcano experiment packet: volcano crater, spoon, syringe, and 2 powders (sodium bicarbonate and citric acid)
- ⦿ Tree stickers
- ⦿ Cup of water
- ⦿ Plate to protect your table and for easy clean-up
- ⦿ TIP: Use this same volcano chemical experiment packet to do "Volcano Part 2: Earth's Systems" experiment immediately after erupting your volcano.



15 MINUTES

DO THIS EXPERIMENT WITH ADULT
SUPERVISION OR APPROVAL



⚠ BE CAREFUL! Although the chemicals being used in the volcano are common household chemicals, they can be harmful if you put them in your mouth or eyes. Your volcano will erupt so do **NOT** put your face close to the eruption. **Be sure to stand back** so it does not get in your eyes.



⚠ IMPORTANT: Do NOT put your face or hands directly over the volcano!

LET'S DO IT!

1. Decorate your volcano with the **tree stickers**.
2. Place your volcano on top of your plate.
3. Pour 1 scoop of **red sodium bicarbonate powder**.
4. Add 1 scoop of **white citric acid powder** inside the top of the volcano (called the **caldera**). Make sure the scoops are even amounts.
5. Do NOT stir together.
6. Fill the big cup with water.
7. Suck the water into the syringe until full.
8. Experiment by using the syringe to drop water in slowly and observe. Then quickly add the rest of the water from your syringe. Observe what happens.
9. After erupting, empty your volcano chemicals onto your plate.
10. Repeat steps 3 - 5.
11. Scoop your mini cup full of water and dump all of your mini cup of water quickly into the caldera. Observe the reaction.
12. Keep dropping water into cauldron until it stops erupting. After erupting, empty your volcano chemicals onto your plate.
13. Repeat experiment up to 5 times.
Save the remaining chemicals for the "Volcano Part 2" experiment.