mystery science

Grades K-5
Mini-Lesson: “Could a mountain turn into a volcano?”

VIDEO TRANSCRIPT

VIDEO 1

Hi, it's Doug! What counts as a mountain? Would you call this a mountain or just a hill? For me, growing up, I thought of this as a mountain, but that's probably because I grew up in northern Illinois, one of the flattest places in the world. And this thing, this hill, I guess, is one of the tallest things around. Turns out the only reason it's there is because it's the old landfill. It's a hill made out of garbage. Someone named Sophia has a question about actual mountains. Let's give her a call now.

[Video Call]

- Hi, Doug!

- Hi, Sophia!

- I have a question for you. Could a mountain turn into a volcano?

- Ooh, that's a great question.

Could a mountain turn into a volcano? If you're thinking no way, here's a true story that might change your mind. Heimaey is a little island just off the coast of the country of Iceland. A few thousand people live there and call it home. The island of Heimaey is actually a mountain. If you were to sail up close to it, it may look more like a hill from the side, but when you include all the parts of it that are under the ocean, you can see that the part sticking out of the water is the top of the mountain. One day, in the year 1973, the people living on Heimaey got the surprise of

their lives. A crack had formed on one side of the island. Lava was spurting out. The residents of the island were evacuated to safety, on nearby Iceland. The eruption lasted for nearly six months. Finally, the lava cooled off and had become solid rock, volcanic rock, called basalt—rock that's dark in color and extremely tough. The island of Heimaey had gotten bigger. So, it seems like here's a case where a mountain did turn into a volcano, at least for a few months. Now, to be fair, I didn't tell you much about the original part of Heimaey, the part people had been living on. It's made of basalt, too. Technically, Heimaey had always been a volcano. It's just that it hadn't erupted in a very long time, and so the people of Heimaey were a little surprised. But it does make you wonder, could any old mountain suddenly turn into a volcano and start erupting lava? I live in the U.S. state of California, just a few hours south of the states of Oregon and Washington. And, anytime I drive around in any of these places, I'm always amazed at how many of the mountains here are actually volcanoes. Quiet, peaceful-looking Mount Lassen in Northern California? It erupted 100 years ago, back in 1915. Beautiful Mount St. Helens in Washington? It blew off half its top back in 1980. And it's the same thing for so many other mountains in this area. Mount Rainier, which towers above the city of Seattle, it's a volcano. Mount Hood in Oregon, a volcano. Even little mountains like this one called Black Butte, along the side of the road in Northern California. It's a volcano. When you see so many mountains that are volcanoes, it gets tempting to think, well is every mountain a volcano? How do we even find out? Like, would you just have to wait for it to erupt lava to find out? But surely not. Let's say there's a mountain near where you live. What do you think? How could you find out if it's a volcano? What are some clues you could look for?

VIDEO 2

You might have had different ideas. Maybe you thought to feel it, see if it feels hot. Here's another possibility. Look at what kind of rock the mountain is made of. If it's volcanic rock, then there's at least some chance that the mountain might have the ability to erupt lava. You can get good at learning what volcanic rock looks like. I mentioned basalt earlier. It's one of the most common kinds of rocks that volcanoes are made of. It's always dark in color and really tough. This is rock that doesn't crumble easily. Some basalt even has little holes in it, like this. Those are air bubbles from when it was still lava. If you go out and look at what kind of rock different mountains are made of, you'll discover for yourself that not all mountains are made of volcanic rock. For example, check out the red rocks of Colorado's Front Range, the east edge of the Rocky Mountains. They're made of reddish-colored sand and bits of pebbles that formed along the bottom of a river. Or even Mount Everest in Asia, the tallest mountain in the world. Now, if there's any mountain that might be a huge volcano, it's tempting to think this has to be it. But climbers who've made it all the way to the top can tell you that a lot of the rock up there contains fossils of animals that lived along the bottom of the ocean. Up on top of Mount Everest, there's rock made of sand, pebbles—coral even. There's no volcanic rock at all. Mount Everest has never erupted, and there's no reason to think it ever would. It's not volcanic. Still, you might be surprised to find some mountains made of volcanic rock, even if you live somewhere that's not ever been known for having volcanoes, like here in the U.S. state of Missouri, for example. Thousands of miles from any famous volcanoes are the St. Francois Mountains. The tallest peak, called Taum Sauk, was a volcano that spewed out lava which cooled off and became volcanic rock. Or, in the U.S. state of Virginia are two small mountains. Maybe we should just call these hills, but both of them are made of basalt. Where did that come from? Not every

volcano is an active volcano. All of these examples are extinct volcanoes. Volcanoes that erupted an extremely long time ago, and so left behind volcanic rock, but which haven't erupted since, and scientists think are really unlikely to erupt again. So, in summary, most mountains won't just erupt lava out of nowhere. If they do, it's usually because there have been eruptions in the past. While not every mountain is a volcano, a lot of them are sometimes extinct volcanoes of the past. You can look for clues by searching for volcanic rock. That's all for this week's question. Thanks, Sophia, for asking it.