mystery science

Grades K-5
Mini-Lesson: “Why do thunder and lightning go together?”

VIDEO TRANSCRIPT

VIDEO 1

Hey, it's Esther. Check this out. Have you ever been in a thunderstorm? Thunderstorms can be wild to see, and big thunderstorms can have big impacts. They can make car alarms go off, bring down branches from trees, and more. Someone named Willa has a question about thunderstorms. Let's call Willa now.

[Video Call]

- Hi, Esther!

- Hi, Willa!

- I have a question for you. Why do thunder and lightning go together?

- That's a great question.

Cultures all over the world have stories about lightning and thunder. In some stories from China, the goddess Dianmu, or Mother of Lightning, uses a flashing mirror to make lightning. The Vikings told stories about Thor, god of thunder. Several native cultures in North America tell stories about Thunderbird, a bird-like spirit who can create thunder by flapping their wings. Plus, think of all the movies and stories that take place on dark, stormy nights where the villain appears like this in a big boom of thunder. I'm curious: have you ever experienced a storm with

thunder and lightning? What was it like? If you haven't, what do you think it would feel like to see one?

VIDEO 2

All the stories about thunderstorms around the world are a sign of how important and dramatic thunderstorms can be. If you find thunderstorms impressive or even scary, you're not alone. So let's take a closer look at what's going on in the sky when these storms happen. You almost always see a flash of lightning before a boom of thunder. That flash is actually electricity. You're probably most familiar with electricity as the way we power stuff. Electricity flows from a plug in the wall through power cords to light up a light bulb or power a laptop. You may also be familiar with another way electricity shows up. Ever been walking on carpet in socks, then touched a metal doorknob and felt—ouch! What you felt is actually a spark of electricity. When your feet rubbed on the carpet, it built up an electric charge called static electricity. When you felt that ouch, that was actually electricity moving between two places, like your hand and the doorknob. You can feel it, but if you got up super close to it, you could see something that looked like a teeny tiny lightning bolt, and that's kind of what it is. Inside a storm cloud, there are a bunch of different things banging into each other all the time. Water droplets and tiny globs of ice, warm air, and cooler air. All those things bumping together create an electric charge, kind of like how your socks and the carpet create static electricity. When we see a lightning bolt, that's the electricity moving from one place to another, like the electricity going between your hand and the doorknob. Except, obviously, in this case, the flash of electricity is bigger. The electricity in a storm cloud can jump from cloud to cloud or even between a cloud and the ground. That's what we're watching when we see that big jagged line of lightning. A big burst of electricity like that can be powerful. That's what split this tree and made these jagged lines on the ground. And that

massive spark of electricity makes something else happen, too: thunder. Lightning causes thunder. When lightning flashes, it makes the air around it really hot. Like, really, really, really hot. Being that hot makes the air explode outward. Then as the air starts to cool, it crunches back in. That movement makes the sound we hear as thunder. So when you hear the sound of thunder, whether or not you see lightning nearby, there is lightning somewhere. Those sounds you're hearing are the sound of the air exploding out and in around a hot bolt of lightning, then wiggling back to stillness. You might not be able to see the air moving, but you can hear it from about ten miles away, maybe even further. Now, all this might feel kind of dramatic. Electricity shooting through the air, air getting so hot it booms like a giant drum you can feel in your chest. It is true that lightning and thunder can be powerful, and we should respect that by taking steps to stay safe. If you see lightning, it's usually a smart idea to go inside. But as long as you do that and an adult pays attention to any big weather warnings on the news, you're good. So in summary, lightning is a big spark of electricity in the air, usually during a storm. Lightning causes thunder. When lightning flashes, it makes the air around it really, really hot. That hot air explodes out, then crunches back in and makes the sound we hear as thunder. Thunderstorms can be scary, but they're also one of the most powerful and awe-inspiring things weather does. That's all for this week's question. Thanks for asking, Willa.